

CASE 5635: Appl. of SUNDANCE OIL
CO. for SALT WATER DISPOSAL,
Chaves County

CASE NO.

5635

APPLICATION,
TRANSCRIPTS,
SMALL EXHIBITS,

ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
March 3, 1976

EXAMINER HEARING

IN THE MATTER OF:

Application of Sundance Oil Company for) CASE
salt water disposal, Chaves County,) 5635
New Mexico.)

BEFORE: Richard L. Stamets, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission: William F. Carr, Esq.
Legal Counsel for the Commission
State Land Office Building
Santa Fe, New Mexico

For the Applicant: Jack M. Campbell, Esq.
CAMPBELL AND BINGHAM
Attorneys at Law
One Jefferson Place
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1 MR. STAMETS: We will call Case 5635.

2 MR. CARR: Case 5635, application of Sundance Oil
3 Company for salt water disposal, Chaves County, New Mexico.

4 MR. STAMETS: Call for appearances in this case.

5 MR. CAMPBELL: Mr. Examiner, I'm Jack M. Campbell
6 of Campbell and Bingham, One Jefferson Place, Santa Fe,
7 New Mexico appearing on behalf of the applicant.

8 MR. STAMETS: Any other appearances?

9 MR. CAMPBELL: Mr. Examiner, may I take just a moment
10 to have the exhibits marked, it may save us some time.

11 (THEREUPON, the applicants exhibits were
12 marked for identification.)

13 MR. CAMPBELL: Mr. Examiner, I have three witnesses
14 to be sworn.

15 (THEREUPON, the witnesses were duly sworn.)

16 MR. CAMPBELL: Mr. Scott.

17
18 GEORGE SCOTT

19 called as a witness, having been first duly sworn, was
20 examined and testified as follows:

21
22 DIRECT EXAMINATION

23 BY MR. CAMPBELL:

24 Q Will you state your name, please?

25 A George Scott.

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1 Q. Where do you live, Mr. Scott?

2 A. In Roswell, New Mexico.

3 Q. What is your occupation?

4 A. I'm a consulting geologist.

5 Q. Will you give the Examiner a brief resume of your
6 education, experience and background?

7 A. Yes. I have B.S. and M.S. degrees in geology from
8 the University of Oklahoma. I have a year and a half of
9 experience with Well Log Engineering Company, ten years
10 experience in geology with the Humble Oil Company and approxi-
11 mately twelve years as a consulting geologist.

12 Q. And in your capacity as a consulting geologist have
13 you recently done some work with Sundance Oil Company?

14 A. Yes, I have.

15 Q. Would you state the nature of that and the period
16 of time it is covering?

17 A. Approximately two years of consulting for Sundance
18 in oil and gas exploration and in well-site work and part of
19 that work was involved in the area involved in the hearing
20 here.

21 Q. As a result of that are you acquainted with the
22 application of Sundance Oil Company in Case Number 5635 for
23 the Commission?

24 A. Yes, I am.

25 Q. I hand you what has been identified as Sundance

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1 Exhibit One and ask you to state what that is, please?

2 A. This is a sub-surface structural map contoured on
3 top of the P-2 zone of the San Andres formation. The producing
4 zone in the Tom Tom Field. This map shows the location of
5 producing wells, dry holes.

6 Q. What is the yellow marking?

7 A. The yellow area outlined in yellow is the acreage,
8 the lease is owned by Sundance Oil Company.

9 Q. And what is the brown line, the jagged line that
10 is across and up to the northeast corner of the lease, of your
11 lease area and some unleased area of the Tom Tom Field?

12 A. That is the line of cross section which --

13 Q. Which you are going to offer?

14 A. Which I will offer.

15 Q. What is the red dotted line?

16 A. The red dotted line is the approximate up-dip limit
17 of permeability in the local area, as best we are able to
18 determine.

19 Q. And what is the well with the red line around it, the
20 circle around it?

21 A. That is the proposed salt water disposal well for
22 Sundance to dispose of waters produced in conjunction with
23 their production.

24 Q. On Exhibit One I notice in the southwest quarter of
25 Section 35 a well which appears to be or have been an injection

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1 well, are you acquainted from your analysis of the area, with
2 that well?

3 A. Yes, that is a salt water disposal well operated by
4 the Amoco Oil Company. The injection was approved in 1968 by
5 the Commission. They are putting that water into the P-2 zone
6 of the San Andres formation.

7 Q. That is the same zone you are proposing to inject
8 on the other side of the field?

9 A. That is correct.

10 Q. Do you have any further comments about this particular
11 exhibit?

12 A. Nothing comes to mind at this time.

13 Q. I now hand you what has been marked as Sundance
14 Exhibit Two and ask you to state what that is?

15 A. This is a subsurface cross section cutting across the
16 Tom Tom Field. It shows the water productive wells at the west
17 margin of the field and then it goes across the producing wells
18 in the center and the northeast part of the field.

19 Correlations are shown there. We display that the
20 P-2 zone in this area is productive of either water or oil,
21 depending on where you are in the field and I think that it
22 shows here that on the west edge of the field the porosity in
23 the P-2 zone is water productive.

24 Q. Will you tell us what the symbols at the top reflect
25 in terms of these wells?

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1 A. The symbols there are the same as on the map. The
2 circle with the cross hatchures on it represent dry holes, the
3 circle with the red circle around it is our proposed injection
4 well and the black dots represent producing wells.

5 Q Now, I hand you what has been identified as Sundance
6 Exhibit Three and ask if you will please state what that is?
7 That's the log.

8 A. This is a copy of the compensated neutron density
9 log which was run on the Sundance Oil Company No. 2 Ingram
10 Federal. This is the proposed injection well. This log
11 displays the P-1, P-2 and P-3 zones and it shows the interval
12 that has been perforated and is open and this is the interval
13 in which we propose to inject water. The log displays that
14 those perforations are opposite the highest porosities in the
15 P-2 zone.

16 Q What is the size of the perforated zone, approximately?

17 A. Approximately six feet there are covered by the
18 perforations.

19 MR. CAMPBELL: I would like to offer Sundance
20 Exhibits One, Two and Three into evidence.

21 MR. STAMETS: These exhibits will be admitted.

22 (THEREUPON, Sundance Exhibits One, Two and
23 Three were admitted into evidence.)

24 MR. CAMPBELL: I have no further questions of this
25 witness. We have an engineering witness, Mr. Examiner.

1 MR. STAMETS: Okay. Which witness will be able to
2 talk about fresh waters in the area?

3 MR. CAMPBELL: Well, I presume you would know about
4 that, it's geology.

5 THE WITNESS: Yes.

6
7 CROSS EXAMINATION

8 BY MR. STAMETS:

9 Q Are there any fresh water wells, fresh water zones
10 in the area?

11 A Yes, the area is overlain -- well, at the surface
12 you have approximately a hundred and fifty to two hundred feet
13 of blow sand overlying the Triassic red bed and there is local
14 ground water accumulations in the area in the blow sand. There
15 are some stock wells in the general area.

16 MR. CAMPBELL: Do you know what depth those wells
17 are?

18 A I do not know the depth of the wells.

19 MR. CAMPBELL: Is that shallow?

20 A I would say they are shallow. They are stock wells.
21 They are definitely less than two hundred feet. I know of no
22 other significant fresh water zones.

23 Q (Mr. Stamets continuing.) Looking back at Exhibit
24 Number One, I see there are some plugged and abandoned wells,
25 both east and west in the general vicinity of the injection

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1 well, did you review the records on those to determine how
2 they were plugged?

3 A. Yes. Which wells are you referring specifically to,
4 sir?

5 Q. Well, to the west there is a well identified as
6 No. 4?

7 A. Yes, that well is shown on the west end of the cross
8 section. It was properly plugged and abandoned in accordance
9 with the State's Rules and Regulations.

10 Q. Do you have any idea how much cement was used above
11 the San Andres zone?

12 A. I would like to defer that question to Mr. Bill
13 Morgan, Sundance's field superintendent, if I may.

14 MR. CAMPBELL: He will be a witness and he has the
15 information. He is getting it from his car now, sir.

16 MR. STAMETS: That's fine.

17 Q. (Mr. Stamets continuing.) Referring then to Exhibit
18 Number Two, is the P-2 zone continuous across, oh, say, the
19 western half of the cross section at least, so that what you
20 have here is water in communication in the reservoir with the
21 oil zone?

22 A. Yes, the P-2 zone can be correlated across the entire
23 area, local area here. The zone of porosity carries across
24 the area also. That portion of it carrying the water appears
25 to be in direct contact with that or a part of that portion of

1 it that is producing oil.

2 Q And that water that you will be injecting is produced
3 water from the P-2 zone?

4 A That is correct.

5 Q You will not really be adding significant pressure
6 to the reservoir here but simply putting water back into
7 it that came out of it in the first place?

8 A That is correct.

9 MR. STAMETS: I presume the engineering witness will
10 speak about pressures and well construction and so on?

11 MR. CAMPBELL: Yes, he will.

12 MR. STAMETS: Any other questions of this witness?

13 He may be excused.

14 (THEREUPON, the witness was excused.)

15 MR. CAMPBELL: I would like to call Mr. Ralph Gray,
16 please.

17 RALPH L. GRAY

18 called as a witness, having been first duly sworn, was
19 examined and testified as follows:
20

21 DIRECT EXAMINATION

22
23 BY MR. CAMPBELL:

24 Q State your name, please?

25 A Ralph L. Gray.

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1 Q Where do you live, Mr. Gray?

2 A Artesia.

3 Q What is your occupation?

4 A Consulting petroleum engineer.

5 Q Have you testified on any previous occasions before
6 this Commission?

7 A Yes, sir.

8 MR. CAMPBELL: Is the Commission acquainted with
9 Mr. Gray's qualifications?

10 MR. STAMETS: Yes, sir.

11 MR. CAMPBELL: And they are acceptable, I presume?

12 MR. STAMETS: They are.

13 Q (Mr. Campbell continuing.) Mr. Gray, in connection
14 with your professional activities, have you recently done
15 consulting work for Sundance Oil Company?

16 A Yes, I have reviewed all of the information in the
17 Tom Tom Field and their operations.

18 Q I refer you to what has been identified as Sundance
19 Exhibit Four and ask you to state what that is?

20 A Exhibit Four is a diagrammatic sketch of the proposed
21 water injection well. This diagram shows that the surface
22 casing was eight-and-five-eighths twenty-eight pound casing
23 which was set at a depth of four hundred and three feet and
24 cement was circulated to the surface, so this is completely
25 cemented from the four hundred and three feet to the surface

1 which covers all of the shallow fresh waters and then the
2 next string of casing is a production string which is four-
3 and-a-half inch, eleven point six pound which was set at a
4 depth of four thousand and three feet and this was cemented
5 initially with three hundred sacks of cement and then later a
6 squeeze job was applied to the perforations and this consisted
7 of another three hundred sacks and then the pay interval was
8 re-perforated so a total of six hundred sacks of cement was
9 used on this well.

10 The top of the cement behind the casing was
11 determined at twenty-nine hundred and thirty feet so there is
12 approximately nine hundred feet of cement behind the casing
13 above the perforations, which is an adequate amount of cement.
14 Q. You said "an adequate amount" not "and adquate amount"?
15 A. "An adequate amount."

16 Then the operator proposes to set a packer at a
17 depth of approximately thirty-seven hundred and ninety-nine
18 feet and the injection string of tubing will be two-and-three-
19 eighths OD. The tubing will be internally coated with either
20 a cement lining or a plastic lining and inert material will be
21 used behind the tubing for protection.

22 Now, it will be possible, of course, to monitor the
23 pressure between the casing and the tubing and a pressure gauge
24 will be installed at the surface there in the annular space so
25 if ever any failure occurs in the tubing string then this will

1 be evident in the casing pressure.

2 Q Is it your professional opinion that if this
3 injection well is completed in this fashion that any zones,
4 other than the injection zones, will be fully protected in
5 terms of intrusion of the salt water?

6 A Yes, I think it will be very well protected.

7 Q Will you comment concerning the injection rate that
8 is contemplated here?

9 A Well, it's anticipated that something less than two
10 hundred barrels of water per day will be injected initially
11 and the operator has conducted some preliminary tests in order
12 to determine the injectivity characteristics in the well and
13 it has been found that two hundred barrels of water per day
14 can be injected without any surface pressure. It will go into
15 the well under a vacuum.

16 Q I hand you what has been identified as Sundance
17 Exhibit Number Five and ask you to state what that is?

18 A Exhibit Number Five is a tabulation of oil and water
19 production and this is for the month of December 1975. This
20 was omitted on the exhibit itself but this is the figures for
21 December 1975 and this shows all of the wells producing in
22 the field as of December. It shows the daily oil and the
23 daily water production for each well and this also shows
24 accumulative oil and accumulative water production by wells.

25 In summary, the pool was producing four hundred and

1 forty-nine barrels of oil and a hundred and seventy-three
2 barrels of water per day for the month of December. Water
3 production on the Sundance leases is somewhat more than the
4 December figure showed at that time but it is something less
5 than two hundred barrels a day at this time.

6 The accumulative oil production and the accumulative
7 water production figures are approximately a hundred and eighty-
8 nine thousand and two hundred and sixty-five barrels
9 respectively, so it is evident that a substantial amount of
10 fluid has been produced from the reservoir up to this time.

11 Q It is obvious, Mr. Gray, that the process here is
12 simply going to be the re-injection of produced water from
13 this reservoir. Would you make some observations as to your
14 opinion concerning the impacts, if any, upon the reservoir
15 ultimate recovery of oil if the Commission approves this
16 injection?

17 A Yes, normally we find that even in a water-drive
18 reservoir or partially water-drive, that it is very seldom
19 in our area that you have a one hundred percent effective
20 water-drive, so injection of the produced water back into
21 the reservoir, I think, will have an effect of possibly
22 increasing the oil that can be recovered by displacing more
23 of the oil into the producing wells than would be otherwise
24 recovered.

25 MR. CAMPBELL: I would like to offer Sundance's

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1 Exhibits Four and Five into evidence, Mr. Examiner.

2 MR. STAMETS: The exhibits will be admitted.

3 (THEREUPON, Sundance's Exhibits Four and
4 Five were admitted into evidence.)

5 MR. CAMPBELL: That is all the questions I have of
6 this witness at this time.

7
8 CROSS EXAMINATION

9 BY MR. STAMETS:

10 Q Mr. Gray, do you know why the perforations were
11 squeezed?

12 A Yes, the well was initially completed and tested and
13 produced only water, so the operator wanted to be very certain
14 that he did have a good cement job, that the water was coming
15 from the C-2 zone so he squeezed it with three hundred sacks of
16 cement and re-perforated but the well tested water again so
17 it's pretty evident, I think, that the water is coming out
18 of the C-2 zone.

19 Q Mr. Gray, if the well continues to take the production
20 or continues to take the water on vacuum, would a gauge at the
21 surface show a leak in the tubing?

22 A Well, no, not as long as it is under a vacuum the
23 gauge wouldn't show anything until you get some pressure
24 conditions.

25 Q If it were required before approval of this particular

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1 application were granted, would the applicant be willing to
2 take an annual pressure test on the annulus to determine that
3 everything was in order?

4 A. By taking an annual pressure test, are you saying
5 just to install a pressure gauge and take a reading or what?

6 Q. Go out there with a small unit and actually pressure
7 up on the annular space to a hundred pounds or something like
8 that?

9 A. Oh, I see. Yes, I'm sure he would.

10 MR. CAMPBELL: The answer is, yes.

11 Q. (Mr. Stamets continuing.) Now, assuming that this
12 ceases to take water production on a vacuum, would the applicant
13 be willing to limit the injection pressure to no more than
14 a half a pound per foot of depth?

15 A. Oh, I'm sure that he could live with that.

16 MR. STAMETS: Are there any other questions of the
17 witness? He may be excused.

18 (THEREUPON, the witness was excused.)

19 MR. CAMPBELL: We would call Mr. William N. Morgan.

20 WILLIAM N. MORGAN

21
22 called as a witness, having been first duly sworn, was
23 examined and testified as follows:

24 DIRECT EXAMINATION

25 BY MR. CAMPBELL:

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1 Q Would you state your name, please?

2 A William N. Morgan, Sundance Oil.

3 Q Where do you live, Mr. Morgan?

4 A Artesia, New Mexico.

5 Q What are your duties with Sundance Oil?

6 A Well, I'm superintendent with Sundance and in charge
7 of their total operations.

8 Q Would you briefly refer to your previous experience?

9 A Well, of course, I came to New Mexico in '37. I
10 worked in and out of the State, several states, I have been with
11 several different oil companies, I have worked in all types of
12 drilling, completing, remedial and this type of thing for some
13 thirty-five years.

14 Q In connection with your duties with Sundance Oil
15 Company, are you acquainted with the application in this case,
16 the area that is involved and the completion history of these
17 wells?

18 A Yes, sir.

19 Q The Examiner has asked some questions with regard to
20 the plugging and abandoning of some wells in the vicinity of
21 the injection well here, the proposed injection well here, do
22 you have some information on that?

23 A Yes.

24 Q Let's take Well No. 4 immediately to the west of
25 the proposed injection well?

1 A. Okay, the Intent to Plug has been filed. I doubt
2 if Mr. Stamets has seen this yet but we T'd that at thirty-nine,
3 seventy and after logging we perforated, I mean, we went in
4 there and started our plugs in this thing and we started at
5 three thousand and ninety-two, back to twenty-nine, ninety-two,
6 there was a thirty-five sack plug. And then from sixteen,
7 fourteen to fifteen, fourteen, there was a thirty-five sack
8 plug and then from four, sixty-six to three, sixty-six, which
9 is half in and half out of the eight and five, there is a
10 thirty-five sack plug and then a twenty sack plug in the
11 surface, with a marker, which is a hundred and twenty-five sacks.

12 MR. STAMETS: Those thirty-five sack plugs would
13 be roughly what, a hundred feet long in that size of a hole?

14 A. Yes, sir. In fact, that is a little bit more than
15 what they call for in the seven and seven-eighths hole. This
16 is about a hundred foot plug.

17 Q. (Mr. Campbell continuing.) Now, would you refer to
18 the well immediately east of the injection well, which is --

19 A. All right, that's the Pay Federal No. 11 coming east.

20 Q. Yes.

21 A. And this was plugged according to USGS. Do you need
22 these figures? If you do I can find them.

23 MR. STAMETS: I would like to have the amount of
24 cement right above the San Andres zone if you have that
25 available.

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1 A. It would be a hundred sack plug and let's see if I
2 can find it here.

3 MR. STAMETS: Did you personally supervise the
4 plugging of these wells?

5 A. Yes, sir, I did.

6 Q (Mr. Campbell continuing.) You are referring now
7 to the notes you made in connection with your supervision of
8 the plugging?

9 A. Yes, sir. This is the way they were plugged and
10 also witnessed by Halliburton and Cactus Drilling Company.

11 This on the Pay Federal No. 11, there was a thirty-
12 five sack plug from three thousand to thirty-one, a thirty-five
13 sack plug from thirteen, seventy five to fourteen, seventy-five;
14 a thirty-five sack plug from three, fifty to four, fifty.
15 That's half in and half out, and then a twenty sack plug on
16 the top with a marker.

17 Q Was this same procedure followed with regard to
18 the well shown as No. 7, immediately north of No. 11 Well.

19 A. Yes, sir, these intervals change some because of the
20 rise and fall of the formation, because they like for this
21 plugging to be, where these plugs will fall on top of the
22 San Andres and over the section or above the section itself.

23 Q Now, Mr. Morgan, I hand you what has been identified
24 as Sundance Exhibit Number Six and ask you to state what
25 that is please?

1 A. Yes, sir, this is the requirements of the Federal
2 Government and they have approved our application there and
3 they have some stipulations about what we have to do in order
4 to comply with them.

5 Q Is your company prepared to comply with items one
6 through five of the letter of January 30, 1976, your Exhibit
7 Five?

8 A. Yes, sir, we are. We have discussed that, in fact,
9 at length and some of these things we have given quite a bit
10 of discussion to, others we can't until such time as we are
11 approved to where we can continue with our operation.

12 MR. CAMPBELL: I would like to offer Sundance
13 Exhibit Six into evidence.

14 MR. STAMETS: Exhibit Six will be admitted.

15 (THEREUPON, Sundance Exhibit Number Six
16 was admitted into evidence.)

17 MR. CAMPBELL: I have no more questions at this
18 time.

19 MR. STAMETS: Any questions of this witness? He
20 may be excused.

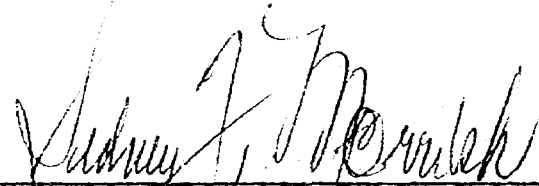
21 (THEREUPON, the witness was excused.)

22 MR. CAMPBELL: That completes our case, Mr. Examiner.

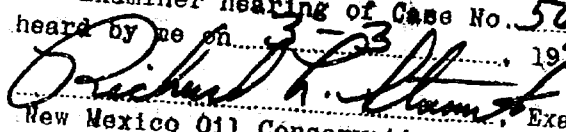
23 MR. STAMETS: Anything further in this case? The
24 case will be taken under advisement and we will take a short
25 recess.

REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand Reporter,
do hereby certify that the foregoing and attached Transcript
of Hearing before the New Mexico Oil Conservation Commission
was reported by me, and the same is a true and correct record
of the said proceedings to the best of my knowledge, skill and
ability.


Sidney F. Morrish, C.S.R.

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I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 5635
heard by me on 3-23-76.

Richard H. Stamm, Examiner
New Mexico Oil Conservation Commission

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Santa Fe, New Mexico
March 3, 1976

EXAMINER HEARING

IN THE MATTER OF:

Application of Sundance Oil Company for
salt water disposal, Chaves County,
New Mexico.

CASE
5635

BEFORE: Richard L. Stamets, Examiner

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For the New Mexico Oil
Conservation Commission:

William F. Carr, Esq.
Legal Counsel for the Commission
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For the Applicant:

Jack M. Campbell, Esq.
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1 MR. STAMETS: We will call Case 5635.

2 MR. CARR: Case 5635, application of Sundance Oil
3 Company for salt water disposal, Chaves County, New Mexico.

4 MR. STAMETS: Call for appearances in this case.

5 MR. CAMPBELL: Mr. Examiner, I'm Jack M. Campbell
6 of Campbell and Bingham, One Jefferson Place, Santa Fe,
7 New Mexico appearing on behalf of the applicant.

8 MR. STAMETS: Any other appearances?

9 MR. CAMPBELL: Mr. Examiner, may I take just a moment
10 to have the exhibits marked, it may save us some time.

11 (THEREUPON, the applicants exhibits were
12 marked for identification.)

13 MR. CAMPBELL: Mr. Examiner, I have three witnesses
14 to be sworn.

15 (THEREUPON, the witnesses were duly sworn.)

16 MR. CAMPBELL: Mr. Scott.

17
18 GEORGE SCOTT

19 called as a witness, having been first duly sworn, was
20 examined and testified as follows:

21
22 DIRECT EXAMINATION

23 BY MR. CAMPBELL:

24 Q Will you state your name, please?

25 A George Scott.

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Phone (505) 982-9212

1 Q Where do you live, Mr. Scott?

2 A In Roswell, New Mexico.

3 Q What is your occupation?

4 A I'm a consulting geologist.

5 Q Will you give the Examiner a brief resume of your
6 education, experience and background?

7 A Yes. I have B.S. and M.S. degrees in geology from
8 the University of Oklahoma. I have a year and a half of
9 experience with Well Log Engineering Company, ten years
10 experience in geology with the Humble Oil Company and approxi-
11 mately twelve years as a consulting geologist.

12 Q And in your capacity as a consulting geologist have
13 you recently done some work with Sundance Oil Company?

14 A Yes, I have.

15 Q Would you state the nature of that and the period
16 of time it is covering?

17 A Approximately two years of consulting for Sundance
18 in oil and gas exploration and in well-site work and part of
19 that work was involved in the area involved in the hearing
20 here.

21 Q As a result of that are you acquainted with the
22 application of Sundance Oil Company in Case Number 5635 for
23 the Commission?

24 A Yes, I am.

25 Q I hand you what has been identified as Sundance

1 Exhibit One and ask you to state what that is, please?

2 A This is a sub-surface structural map contoured on
3 top of the P-2 zone of the San Andres formation. The producing
4 zone in the Tom Tom Field. This map shows the location of
5 producing wells, dry holes.

6 Q What is the yellow marking?

7 A The yellow area outlined in yellow is the acreage,
8 the lease is owned by Sundance Oil Company.

9 Q And what is the brown line, the jagged line that
10 is across and up to the northeast corner of the lease, of your
11 lease area and some unleased area of the Tom Tom Field?

12 A That is the line of cross section which --

13 Q Which you are going to offer?

14 A Which I will offer.

15 Q What is the red dotted line?

16 A The red dotted line is the approximate up-dip limit
17 of permeability in the local area, as best we are able to
18 determine.

19 Q And what is the well with the red line around it, the
20 circle around it?

21 A That is the proposed salt water disposal well for
22 Sundance to dispose of waters produced in conjunction with
23 their production.

24 Q On Exhibit One I notice in the southwest quarter of
25 Section 35 a well which appears to be or have been an injection

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1 well, are you acquainted from your analysis of the area, with
2 that well?

3 A Yes, that is a salt water disposal well operated by
4 the Amoco Oil Company. The injection was approved in 1968 by
5 the Commission. They are putting that water into the P-2 zone
6 of the San Andres formation.

7 Q That is the same zone you are proposing to inject
8 on the other side of the field?

9 A That is correct.

10 Q Do you have any further comments about this particular
11 exhibit?

12 A Nothing comes to mind at this time.

13 Q I now hand you what has been marked as Sundance
14 Exhibit Two and ask you to state what that is?

15 A This is a subsurface cross section cutting across the
16 Tom Tom Field. It shows the water productive wells at the west
17 margin of the field and then it goes across the producing wells
18 in the center and the northeast part of the field.

19 Correlations are shown there. We display that the
20 P-2 zone in this area is productive of either water or oil,
21 depending on where you are in the field and I think that it
22 shows here that on the west edge of the field the porosity in
23 the P-2 Zone is water productive.

24 Q Will you tell us what the symbols at the top reflect
25 in terms of these wells?

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1 A. The symbols there are the same as on the map. The
2 circle with the cross hatchures on it represent dry holes, the
3 circle with the red circle around it is our proposed injection
4 well and the black dots represent producing wells.

5 Q. Now, I hand you what has been identified as Sundance
6 Exhibit Three and ask if you will please state what that is?
7 That's the log.

8 A. This is a copy of the compensated neutron density
9 log which was run on the Sundance Oil Company No. 2 Ingram
10 Federal. This is the proposed injection well. This log
11 displays the P-1, P-2 and P-3 zones and it shows the interval
12 that has been perforated and is open and this is the interval
13 in which we propose to inject water. The log displays that
14 those perforations are opposite the highest porosities in the
15 P-2 zone.

16 Q. What is the size of the perforated zone, approximately?

17 A. Approximately six feet there are covered by the
18 perforations.

19 MR. CAMPBELL: I would like to offer Sundance
20 Exhibits One, Two and Three into evidence.

21 MR. STAMETS: These exhibits will be admitted.

22 (THEREUPON, Sundance Exhibits One, Two and
23 Three were admitted into evidence.)

24 MR. CAMPBELL: I have no further questions of this
25 witness. We have an engineering witness, Mr. Examiner.

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1 MR. STAMETS: Okay. Which witness will be able to
2 talk about fresh waters in the area?

3 MR. CAMPBELL: Well, I presume you would know about
4 that, it's geology.

5 THE WITNESS: Yes.

6
7 CROSS EXAMINATION

8 BY MR. STAMETS:

9 Q Are there any fresh water wells, fresh water zones
10 in the area?

11 A Yes, the area is overlain -- well, at the surface
12 you have approximately a hundred and fifty to two hundred feet
13 of blow sand overlying the Triassic red bed and there is local
14 ground water accumulations in the area in the blow sand. There
15 are some stock wells in the general area.

16 MR. CAMPBELL: Do you know what depth those wells
17 are?

18 A I do not know the depth of the wells.

19 MR. CAMPBELL: Is that shallow?

20 A I would say they are shallow. They are stock wells.
21 They are definitely less than two hundred feet. I know of no
22 other significant fresh water zones.

23 Q (Mr. Stamets continuing.) Looking back at Exhibit
24 Number One, I see there are some plugged and abandoned wells,
25 both east and west in the general vicinity of the injection

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1 well, did you review the records on those to determine how
2 they were plugged?

3 A Yes. Which wells are you referring specifically to,
4 sir?

5 Q Well, to the west there is a well identified as
6 No. 4?

7 A Yes, that well is shown on the west end of the cross
8 section. It was properly plugged and abandoned in accordance
9 with the State's Rules and Regulations.

10 Q Do you have any idea how much cement was used above
11 the San Andres zone?

12 A I would like to defer that question to Mr. Bill
13 Morgan, Sundance's field superintendent, if I may.

14 MR. CAMPBELL: He will be a witness and he has the
15 information. He is getting it from his car now, sir.

16 MR. STAMETS: That's fine.

17 Q (Mr. Stamets continuing.) Referring then to Exhibit
18 Number Two, is the P-2 zone continuous across, oh, say, the
19 western half of the cross section at least, so that what you
20 have here is water in communication in the reservoir with the
21 oil zone?

22 A Yes, the P-2 zone can be correlated across the entire
23 area, local area here. The zone of porosity carries across
24 the area also. That portion of it carrying the water appears
25 to be in direct contact with that or a part of that portion of

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1 it that is producing oil.

2 Q And that water that you will be injecting is produced
3 water from the P-2 zone?

4 A That is correct.

5 Q You will not really be adding significant pressure
6 to the reservoir here but simply putting water back into
7 it that came out of it in the first place?

8 A That is correct.

9 MR. STAMETS: I presume the engineering witness will
10 speak about pressures and well construction and so on?

11 MR. CAMPBELL: Yes, he will.

12 MR. STAMETS: Any other questions of this witness?
13 He may be excused.

14 (THEREUPON, the witness was excused.)

15 MR. CAMPBELL: I would like to call Mr. Ralph Gray,
16 please.

17
18 RALPH L. GRAY

19 called as a witness, having been first duly sworn, was
20 examined and testified as follows:

21
22 DIRECT EXAMINATION

23 BY MR. CAMPBELL:

24 Q State your name, please?

25 A Ralph L. Gray.

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1 Q Where do you live, Mr. Gray?

2 A Artesia.

3 Q What is your occupation?

4 A Consulting petroleum engineer.

5 Q Have you testified on any previous occasions before
6 this Commission?

7 A Yes, sir.

8 MR. CAMPBELL: Is the Commission acquainted with
9 Mr. Gray's qualifications?

10 MR. STAMETS: Yes, sir.

11 MR. CAMPBELL: And they are acceptable, I presume?

12 MR. STAMETS: They are.

13 Q (Mr. Campbell continuing.) Mr. Gray, in connection
14 with your professional activities, have you recently done
15 consulting work for Sundance Oil Company?

16 A Yes, I have reviewed all of the information in the
17 Tom Tom Field and their operations.

18 Q I refer you to what has been identified as Sundance
19 Exhibit Four and ask you to state what that is?

20 A Exhibit Four is a diagrammatic sketch of the proposed
21 water injection well. This diagram shows that the surface
22 casing was eight-and-five-eighths twenty-eight pound casing
23 which was set at a depth of four hundred and three feet and
24 cement was circulated to the surface, so this is completely
25 cemented from the four hundred and three feet to the surface

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1 which covers all of the shallow fresh waters and then the
2 next string of casing is a production string which is four-
3 and-a-half inch, eleven point six pound which was set at a
4 depth of four thousand and three feet and this was cemented
5 initially with three hundred sacks of cement and then later a
6 squeeze job was applied to the perforations and this consisted
7 of another three hundred sacks and then the pay interval was
8 re-perforated so a total of six hundred sacks of cement was
9 used on this well.

10 The top of the cement behind the casing was
11 determined at twenty-nine hundred and thirty feet so there is
12 approximately nine hundred feet of cement behind the casing
13 above the perforations, which is an adequate amount of cement.

14 Q You said "an adequate amount" not "and adquate amount"?

15 A "An adequate amount."

16 Then the operator proposes to set a packer at a
17 depth of approximately thirty-seven hundred and ninety-nine
18 feet and the injection string of tubing will be two-and-three-
19 eighths OD. The tubing will be internally coated with either
20 a cement lining or a plastic lining and inert material will be
21 used behind the tubing for protection.

22 Now, it will be possible, of course, to monitor the
23 pressure between the casing and the tubing and a pressure gauge
24 will be installed at the surface there in the annular space so
25 if ever any failure occurs in the tubing string then this will

1 be evident in the casing pressure.

2 Q Is it your professional opinion that if this
3 injection well is completed in this fashion that any zones,
4 other than the injection zones, will be fully protected in
5 terms of intrusion of the salt water?

6 A Yes, I think it will be very well protected.

7 Q Will you comment concerning the injection rate that
8 is contemplated here?

9 A Well, it's anticipated that something less than two
10 hundred barrels of water per day will be injected initially
11 and the operator has conducted some preliminary tests in order
12 to determine the injectivity characteristics in the well and
13 it has been found that two hundred barrels of water per day
14 can be injected without any surface pressure. It will go into
15 the well under a vacuum.

16 Q I hand you what has been identified as Sundance
17 Exhibit Number Five and ask you to state what that is?

18 A Exhibit Number Five is a tabulation of oil and water
19 production and this is for the month of December 1975. This
20 was omitted on the exhibit itself but this is the figures for
21 December 1975 and this shows all of the wells producing in
22 the field as of December. It shows the daily oil and the
23 daily water production for each well and this also shows
24 accumulative oil and accumulative water production by wells.

25 In summary, the pool was producing four hundred and

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1 forty-nine barrels of oil and a hundred and seventy-three
2 barrels of water per day for the month of December. Water
3 production on the Sundance leases is somewhat more than the
4 December figure showed at that time but it is something less
5 than two hundred barrels a day at this time.

6 The accumulative oil production and the accumulative
7 water production figures are approximately a hundred and eighty-
8 nine thousand and two hundred and sixty-five barrels
9 respectively, so it is evident that a substantial amount of
10 fluid has been produced from the reservoir up to this time.

11 Q It is obvious, Mr. Gray, that the process here is
12 simply going to be the re-injection of produced water from
13 this reservoir. Would you make some observations as to your
14 opinion concerning the impacts, if any, upon the reservoir
15 ultimate recovery of oil if the Commission approves this
16 injection?

17 A Yes, normally we find that even in a water-drive
18 reservoir or partially water-drive, that it is very seldom
19 in our area that you have a one hundred percent effective
20 water-drive, so injection of the produced water back into
21 the reservoir, I think, will have an effect of possibly
22 increasing the oil that can be recovered by displacing more
23 of the oil into the producing wells than would be otherwise
24 recovered.

25 MR. CAMPBELL: I would like to offer Sundance's

1 Exhibits Four and Five into evidence, Mr. Examiner.

2 MR. STAMETS: The exhibits will be admitted.

3 (THEREUPON, Sundance's Exhibits Four and
4 Five were admitted into evidence.)

5 MR. CAMPBELL: That is all the questions I have of
6 this witness at this time.

7

8 CROSS EXAMINATION

9 BY MR. STAMETS:

10 Q Mr. Gray, do you know why the perforations were
11 squeezed?

12 A Yes, the well was initially completed and tested and
13 produced only water, so the operator wanted to be very certain
14 that he did have a good cement job, that the water was coming
15 from the C-2 zone so he squeezed it with three hundred sacks of
16 cement and re-perforated but the well tested water again so
17 it's pretty evident, I think, that the water is coming out
18 of the C-2 zone.

19 Q Mr. Gray, if the well continues to take the production
20 or continues to take the water on vacuum, would a gauge at the
21 surface show a leak in the tubing?

22 A Well, no, not as long as it is under a vacuum the
23 gauge wouldn't show anything until you get some pressure
24 conditions.

25 Q If it were required before approval of this particular

1 application were granted, would the applicant be willing to
2 take an annual pressure test on the annulus to determine that
3 everything was in order?

4 A. By taking an annual pressure test, are you saying
5 just to install a pressure gauge and take a reading or what?

6 Q Go out there with a small unit and actually pressure
7 up on the annular space to a hundred pounds or something like
8 that?

9 A. Oh, I see. Yes, I'm sure he would.

10 MR. CAMPBELL: The answer is, yes.

11 Q (Mr. Stamets continuing.) Now, assuming that this
12 ceases to take water production on a vacuum, would the applicant
13 be willing to limit the injection pressure to no more than
14 a half a pound per foot of depth?

15 A. Oh, I'm sure that he could live with that.

16 MR. STAMETS: Are there any other questions of the
17 witness? He may be excused.

18 (THEREUPON, the witness was excused.)

19 MR. CAMPBELL: We would call Mr. William N. Morgan.

20
21 WILLIAM N. MORGAN

22 called as a witness, having been first duly sworn, was
23 examined and testified as follows:

24 DIRECT EXAMINATION

25 BY MR. CAMPBELL:

1 Q Would you state your name, please?

2 A William N. Morgan, Sundance Oil.

3 Q Where do you live, Mr. Morgan?

4 A Artesia, New Mexico.

5 Q What are your duties with Sundance Oil?

6 A Well, I'm superintendent with Sundance and in charge
7 of their total operations.

8 Q Would you briefly refer to your previous experience?

9 A Well, of course, I came to New Mexico in '37. I
10 worked in and out of the State, several states, I have been with
11 several different oil companies, I have worked in all types of
12 drilling, completing, remedial and this type of thing for some
13 thirty-five years.

14 Q In connection with your duties with Sundance Oil
15 Company, are you acquainted with the application in this case,
16 the area that is involved and the completion history of these
17 wells?

18 A Yes, sir.

19 Q The Examiner has asked some questions with regard to
20 the plugging and abandoning of some wells in the vicinity of
21 the injection well here, the proposed injection well here, do
22 you have some information on that?

23 A Yes.

24 Q Let's take Well No. 4 immediately to the west of
25 the proposed injection well?

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1 A Okay, the Intent to Plug has been filed. I doubt
2 if Mr. Stamets has seen this yet but we T'd that at thirty-nine,
3 seventy and after logging we perforated, I mean, we went in
4 there and started our plugs in this thing and we started at
5 three thousand and ninety-two, back to twenty-nine, ninety-two,
6 there was a thirty-five sack plug. And then from sixteen,
7 fourteen to fifteen, fourteen, there was a thirty-five sack
8 plug and then from four, sixty-six to three, sixty-six, which
9 is half in and half out of the eight and five, there is a
10 thirty-five sack plug and then a twenty sack plug in the
11 surface, with a marker, which is a hundred and twenty-five sacks.

12 MR. STAMETS: Those thirty-five sack plugs would
13 be roughly what, a hundred feet long in that size of a hole?

14 A Yes, sir. In fact, that is a little bit more than
15 what they call for in the seven and seven-eighths hole. This
16 is about a hundred foot plug.

17 Q (Mr. Campbell continuing.) Now, would you refer to
18 the well immediately east of the injection well, which is --

19 A All right, that's the Pay Federal No. 11 coming east.

20 Q Yes.

21 A And this was plugged according to USGS. Do you need
22 these figures? If you do I can find them.

23 MR. STAMETS: I would like to have the amount of
24 cement right above the San Andres zone if you have that
25 available.

1 A It would be a hundred sack plug and let's see if I
2 can find it here.

3 MR. STAMETS: Did you personally supervise the
4 plugging of these wells?

5 A Yes, sir, I did.

6 Q (Mr. Campbell continuing.) You are referring now
7 to the notes you made in connection with your supervision of
8 the plugging?

9 A Yes, sir. This is the way they were plugged and
10 also witnessed by Halliburton and Cactus Drilling Company.

11 This on the Pay Federal No. 11, there was a thirty-
12 five sack plug from three thousand to thirty-one, a thirty-five
13 sack plug from thirteen, seventy five to fourteen, seventy-five;
14 a thirty-five sack plug from three, fifty to four, fifty.
15 That's half in and half out, and then a twenty sack plug on
16 the top with a marker.

17 Q Was this same procedure followed with regard to
18 the well shown as No. 7, immediately north of No. 11 Well.

19 A Yes, sir, these intervals change some because of the
20 rise and fall of the formation, because they like for this
21 plugging to be, where these plugs will fall on top of the
22 San Andres and over the section or above the section itself.

23 Q Now, Mr. Morgan, I hand you what has been identified
24 as Sundance Exhibit Number Six and ask you to state what
25 that is please?

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1 A Yes, sir, this is the requirements of the Federal
2 Government and they have approved our application there and
3 they have some stipulations about what we have to do in order
4 to comply with them.

5 Q Is your company prepared to comply with items one
6 through five of the letter of January 30, 1976, your Exhibit
7 Five?

8 A Yes, sir, we are. We have discussed that, in fact,
9 at length and some of these things we have given quite a bit
10 of discussion to, others we can't until such time as we are
11 approved to where we can continue with our operation.

12 MR. CAMPBELL: I would like to offer Sundance
13 Exhibit Six into evidence.

14 MR. STAMETS: Exhibit Six will be admitted.

15 (THEREUPON, Sundance Exhibit Number Six
16 was admitted into evidence.)

17 MR. CAMPBELL: I have no more questions at this
18 time.

19 MR. STAMETS: Any questions of this witness? He
20 may be excused.

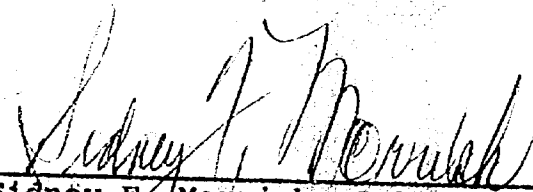
21 (THEREUPON, the witness was excused.)

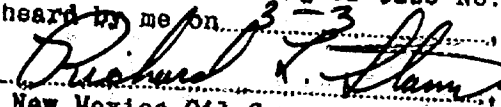
22 MR. CAMPBELL: That completes our case, Mr. Examiner.

23 MR. STAMETS: Anything further in this case? The
24 case will be taken under advisement and we will take a short
25 recess.

REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand Reporter,
do hereby certify that the foregoing and attached Transcript
of Hearing before the New Mexico Oil Conservation Commission
was reported by me, and the same is a true and correct record
of the said proceedings to the best of my knowledge, skill and
ability.


Sidney F. Morrish, C.S.R.

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner Hearing of Case No. 5635
heard by me on 3-3, 1976

Richard F. Ham, Examiner
New Mexico Oil Conservation Commission

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DIRECTOR
JOE D. RAMEY

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P.O. BOX 2088 - SANTA FE
87501

LAND COMMISSIONER
PHIL R. LUCERO
March 11, 1976



STATE GEOLOGIST
EMERY C. ARNOLD

Mr. Jack Campbell
Campbell & Bingaman
Attorneys at Law
Post Office Box 2208
Santa Fe, New Mexico 87501

Re: CASE NO. 5635
ORDER NO. R-5176

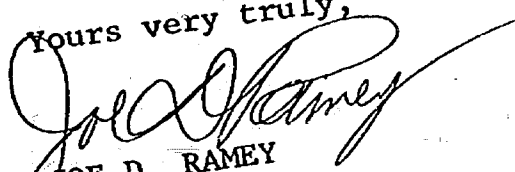
Applicant:

Sundance Oil Company

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Yours very truly,


JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC X
Artesia OCC _____
Aztec OCC _____

Other _____

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5635
Order No. R-5176

APPLICATION OF SUNDANCE OIL COMPANY
FOR SALT WATER DISPOSAL, CHAVES
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on March 3, 1976,
at Santa Fe, New Mexico, before Examiner, Richard L. Stamets.

NOW, on this 10th day of March, 1976, the Commission,
a quorum being present, having considered the testimony, the
record, and the recommendations of the Examiner, and being fully
advised in the premises,

FINDS:

(1) That due public notice having been given as required
by law, the Commission has jurisdiction of this cause and the
subject matter thereof.

(2) That the applicant, Sundance Oil Company, is the owner
and operator of the Ingram Federal Well No. 2, located in Unit I
of Section 5, Township 8 South, Range 31 East, NMPM, Tom Tom-
San Andres Pool, Chaves County, New Mexico.

(3) That the applicant proposes to utilize said well to
dispose of produced salt water into the San Andres formation,
with injection into the perforated interval from approximately
3,852 feet to 3,858 feet.

(4) That the injection should be accomplished through 2 3/8-
inch internally coated tubing installed in a packer set at
approximately 3799 feet; that the casing-tubing annulus should
be filled with an inert fluid; and that measures should be taken
in order to determine leakage in the casing, tubing, or packer.

(5) That if the pressure is used the injection well or
system should be equipped with a pop-off valve or acceptable
substitute which will limit the wellhead pressure on the injection
well to no more than one half psi for each foot of depth to the
uppermost perforation.

(6) That the operator should notify the supervisor of the
Hobbs district office of the Commission of the date and time of

-2-

Case No. 5635
Order No. R-5176

the installation of disposal equipment so that the same may be inspected.

(7) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(8) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Sundance Oil Company, is hereby authorized to utilize its Ingram Federal Well No. 2, located in Unit I of Section 5, Township 8 South, Range 31 East, NMPM, Tom-San Andres Pool, Chaves County, New Mexico, to dispose of produced salt water into the San Andres formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 3799 feet, with injection into the perforated interval from approximately 3,852 feet to 3,858 feet;

PROVIDED HOWEVER, that the tubing shall be internally coated and that the casing-tubing annulus shall be filled with an inert fluid.

(2) That the disposal well shall be equipped and/or tested to determine leakage in the casing, tubing, or packer in the manner described under (a) or (b) below:

- (a) If injection is by pressure system, the annulus shall be equipped with a pressure gauge or other approved leak detection device.
- (b) If injection takes place with no measurable surface pressure or a negative pressure, the operator shall test the annulus with positive pressure within 30 days of initial injection and annually thereafter. The supervisor of the Hobbs district office of the Commission shall be notified of the date and time of such tests in order that they may be witnessed.

(3) That if injection is by pressure the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than one half psi for each foot of depth to the uppermost perforation.

(4) That the operator shall notify the supervisor of the Hobbs district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.

-3-

Case No. 5635
Order No. R-5176

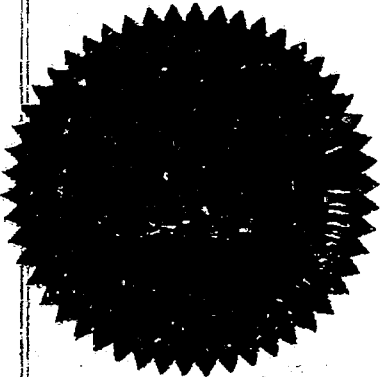
(5) That the operator shall immediately notify the supervisor of the Commission's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(6) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


Phil R. Lucero
PHIL R. LUCERO, Chairman

Emery C. Arnold
EMERY C. ARNOLD, Member

Joe D. Ramey
JOE D. RAMEY, Member & Secretary

S E A L

jr/

#4

2" X 1000' BAIL VALVE
SLIPS + PACKOFF
2" 2000' BAIL VALVE
LARKIN 2 3/8" X 4 1/2"
LARKIN 75 HEAD
2" PLUG VALVE
4 1/2" CASING IN SLIPS
8 5/8" X 28" CASING
CEMENT CIRCULATED
SET AT 403' GL

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION

EXHIBIT NO. 4

CASE NO. 5635

Submitted by SUNDALICH

Hearing Date 3-3-76

CEMENT TOP 2930'
300 LBS CLASS H 3/4" SCER 2
5" SALT 10" SAND PB.

ANNULUS TREATED
WITH UNITED CHEMICAL
THC-71 INHIBITOR

HOWCO R4 PKR 3799'

PERES 3852' TO 58'

4 1/2" X 1160' JCW

INSERT FLOAT

2000' @ 4003'

2 3/8" TUBING IN TENSION 2000'

#5

OIL AND WATER PRODUCTION
TOM-TOM SAN ANDRES

<u>COMPANY AND WELL</u>	<u>DAILY OIL</u>	<u>DAILY WATER</u>	<u>CUM. OIL</u>	<u>CUM. WATER</u>
Amoco Production Co.				
Miller Federal				
#1	4	4	54,394	28,274
#2	0	1	26,219	24,847
#3	2	3	15,021	28,489
#5	<u>8</u>	<u>18</u>	<u>36,772</u>	<u>165,708</u>
Lease Total	15	26	132,406	247,318
Flag Redfern Oil Co.				
Hahn Federal				
#1	40	35	12,740	9,135
#2	80	2	10,249	244
#3	13	8	634	376
#4	<u>39</u>	<u>35</u>	<u>1,989</u>	<u>1,575</u>
Lease Total	172	80	25,612	11,330
Sundance Oil Co.				
Paye Federal				
#1	60	0	15,037	248
#2	12	15	1,117	1,330
#4	58	0	5,205	0
#5	42	0	3,977	0
#6	34	8	2,885	600
#8	12	11	384	330
#10	<u>40</u>	<u>0</u>	<u>1,243</u>	<u>0</u>
Lease Total	260	34	29,848	2,508
Sundance Oil Co.				
Strange Federal				
#1	1	20	1,336	2,418
#2	<u>2</u>	<u>13</u>	<u>195</u>	<u>1,635</u>
Lease Total	3	33	1,531	4,053
POOL TOTAL	449	173	189,397	265,209



United States Department of the Interior

GEOLOGICAL SURVEY

P. O. Drawer II
Artesia, New Mexico 88210

January 30, 1976

Sundance Oil Company
Post Office Drawer I
Artesia, New Mexico 88210

Gentlemen:

Your Notice of Intention to convert and operate as a waste water disposal well your No. 2 Ingram Federal on lease NM-15678 located 1980/S 660/E sec. 5, T. 8 S., R. 31 E., N.M.P.M., Chaves County, New Mexico, by injecting produced waste waters into the San Andres formation at an interval 3852-58 feet, is hereby approved subject to approval by the New Mexico Oil Conservation Commission and the following:

1. If off-lease waters are to be included in this disposal facility, a special land use permit to operate this well as such must be secured from the Bureau of Land Management prior to disposing of any such waters.
2. Where applicable and required, right-of-way permits for pipe lines from other leases must be secured from the Bureau of Land Management or other surface owners prior to laying of any such gathering lines. If additional surface disturbance is required as a result of this action, a Surface Use Plan must be submitted for approval prior to commencing this action.
3. The usual Sundry Notice and Report (form 9-331 in quintuplicate) must be filed with this office prior to commencing any workover, treatment, suspension of operation, or change of status of this well.
4. Prior approval must be obtained for any change or deviation from the original plans or revision thereof.
5. A monthly injection report (N.M.O.C.C. form C-120-A acceptable) must be submitted to this office in duplicate.

Sincerely yours,


James A. Knauf
District Engineer

cc: Roswell

RECEIVED FEB 2 1976

#4

2" X 1000# BALL VALVE
SLIPS & PACK OFF
LARKIN 2 3/8" X 4 1/2"
2" PLUG VALVE
LARKIN 75 HEAD
4 1/2" CASING INSIPS
8 5/8" X 28# CASING
CEMENT CIRCULATED
SET AT 403' GL

CEMENT TOP 2930'
300 LBS CLASS H 3/4" CFB
5" SALT 10" SAND P/S

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4

CASE NO. 2635

Submitted by SUNDANCE

Hearing Date 3-23-76

ANNULUS TREATED
WITH UNITED CHEMICAL
THC-71 INHIBITOR

HOWCO R4 PKR 3799'
- 582 200 SX & 14 per f

PREFS 3852' to 58'

4 4 1/2" X 1160# JCW
INSERT FLAT
7000' to 4003'

#5

OIL AND WATER PRODUCTION
TOM-TOM SAN ANDRES

<u>COMPANY AND WELL</u>	<u>DAILY OIL</u>	<u>DAILY WATER</u>	<u>CUM. OIL</u>	<u>CUM. WATER</u>
Amoco Production Co.				
Miller Federal				
#1	4	4		
#2	0	1	54,394	28,274
#3	2	3	26,219	24,847
#5	8	18	15,021	28,489
			<u>36,772</u>	<u>165,708</u>
Lease Total	15	26	132,406	247,318
Flag Redfern Oil Co.				
Hahn Federal				
#1	40	35	12,740	9,135
#2	80	2	10,249	244
#3	13	8	634	376
#4	39	35	<u>1,989</u>	<u>1,575</u>
Lease Total	172	80	25,612	11,330
Sundance Oil Co.				
Paye Federal				
#1	60	0	15,037	248
#2	12	15	1,117	1,330
#4	58	0	5,205	0
#5	42	0	3,977	0
#6	34	8	2,885	600
#8	12	11	384	330
#10	40	0	<u>1,243</u>	<u>0</u>
Lease Total	260	34	29,848	2,508
Sundance Oil Co.				
Strange Federal				
#1	1	20	1,336	2,418
#2	2	13	<u>195</u>	<u>1,635</u>
Lease Total	3	33	1,531	4,053
POOL TOTAL	449	173	189,397	265,209



United States Department of the Interior

GEOLOGICAL SURVEY

P. O. Drawer U
Artesia, New Mexico 88210

January 30, 1976


Sundance Oil Company
Post Office Drawer I
Artesia, New Mexico 88210

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Your Notice of Intention to convert and operate as a waste water disposal well your No. 2 Ingram Federal on lease NM-15678 located 1980/S 660/E sec. 5, T. 8 S., R. 31 E., N.M.P.M., Chaves County, New Mexico, by injecting produced waste waters into the San Andres formation at an interval 3852-58 feet, is hereby approved subject to approval by the New Mexico Oil Conservation Commission and the following:

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5. A monthly injection report (N.M.O.C.C. form C-120-A acceptable) must be submitted to this office in duplicate.

Sincerely yours,


James A. Knauf
District Engineer

cc: Roswell

RECEIVED FEB 2 1976

2" X 1000# BALL VALVE
SLIPS & PACKOFF
2" 2000# BALL VALVE
LARKIN 2 3/8" X 4 1/2"
LARKIN 75 HEAD
2" PLUG VALVE
4 1/2" CASING INS LIPS
8 5/8" X 28# CASING
CEMENT CIRCULATED
SET AT 403' GL

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. _____
Submitted by _____
Hearing Date _____

2 3/8" TUBING IN TENSION 30,000#

CEMENT TOP 2930'
300 LBS CLASS H 30% CER 2
5# SALT 10# SAND PB

ANNULUS TREATED
WITH UNITED CHEMICAL
THC-71 INHIBITOR

HOWCO R4 PRR 3799'

PPRES 3852' TO 58'

4 1/2" X 11,60# JCW
INSERT FLOAT
2000# @ 4003'

OIL AND WATER PRODUCTION
TOM-TOM SAN ANDRES

<u>COMPANY AND WELL</u>	<u>DAILY OIL</u>	<u>DAILY WATER</u>	<u>CUM. OIL</u>	<u>CUM. WATER</u>
Amoco Production Co.				
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#10	<u>40</u>	<u>0</u>	<u>1,243</u>	<u>0</u>
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RALPH L. GRAY
PETROLEUM ENGINEERING



United States Department of the Interior

GEOLOGICAL SURVEY

P. O. Drawer U
Artesia, New Mexico 88210

January 30, 1976

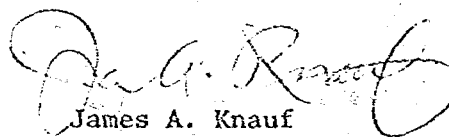
Sundance Oil Company
Post Office Drawer I
Artesia, New Mexico 88210

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Sincerely yours,


James A. Knauf
District Engineer

cc: Roswell

RECEIVED FEB 2 1976

3B - SATURDAY, FEB. 7 - 32B

3/11/76

Case 5635

Warr:

Morgan (Sundance) was notified this has to go for hearing. I also advised if it is to be on March 3 docket we have to know by tomorrow. He will call you if they want to go that route. They may decide to use some other formation although Gessett had told them representing S.A. was best.

29

22 23 24 25 26 27 28 29

Dockets Nos. 9-76 and 10-76 are tentatively set for hearing on March 17 and March 31, 1976. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - MARCH 3, 1976

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Richard L. Statets, Examiner, or Daniel S. Nutter, Alternate Examiner:

CASE 5621: (Continued and Readvertised)

Application of El Paso Natural Gas Company, as agent for Northwest Production Corporation, for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval to commingle Basin-Dakota and Blanco-Mesaverde gas production in the wellbore of the Northwest Production Corporation Jicarilla 119N Well No. 4, located in Unit H of Section 6, Township 26 North, Range 4 West, Rio Arriba County, New Mexico.

CASE 5631: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the amendment of the Special Rules for the Bisti-Lower Gallup Oil Pool, San Juan County, New Mexico, to permit the drilling of wells in said pool at any point within a 40-acre tract not closer than 330 feet to the outer boundary thereof.

CASE 5632: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the amendment of the Special Rules for the Devils Fork-Gallup Pool, Rio Arriba County, New Mexico, to delete therefrom the provisions for a volumetric withdrawal formula and substitute therefor a casinghead gas equivalent formula similar to that in effect for the Angels Peak-Gallup Pool, as promulgated by Order No. R-1410-C.

CASE 5633: Application of Shell Oil Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Blinbry, Tubb-Drinkard and Devonian production in the wellbore of its J. P. No. 1 Well located in Unit C of Section 2, Township 25 South, Range 37 East, Justis Field, Lea County, New Mexico.

CASE 5634: Application of Yates Petroleum Corporation for a unit agreement, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the Duncan Dome Unit Area comprising 7,641 acres, more or less, of State lands in Township 17 South, Ranges 17 and 18 East, Chaves County, New Mexico.

CASE 5635: Application of Sundance Oil Company for salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced water by injection into the San Andres formation through the perforated interval from approximately 3852 to 3858 feet in its Ingram Federal Well No. 2 located in Unit I of Section 5, Township 8 South, Range 31 East, Tom Tom-San Andres Pool, Chaves County, New Mexico.

CASE 5636: Application of Julian Ard for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled in the center of the SW/4 SE/4 of Section 32, Township 9 South, Range 37 East, West Sawyer-San Andres Pool, Lea County, New Mexico, in exception to the provisions of Rule 4, Order No. R-3850.

CASE 5637: Application of R. C. Bennett & J. C. Ryan for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Exxon-State Well No. 2, located in Unit F of Section 25, Township 19 South, Range 28 East, Eddy County, New Mexico, to produce gas from the Upper Pennsylvanian formation through the casing-tubing annulus and gas from the Morrow formation through tubing.

CASE 5638: Application of Belco Petroleum Corporation for Amendment of Order No. R-5111, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Commission Order No. R-5111, which order pooled all mineral interests in the Pennsylvanian formation underlying the W/2 of Section 5, Township 22 South, Range 27 East, to be dedicated to a well drilled at an unorthodox location 660 feet from the South line and 1980 feet from the West line of said Section 5. Applicant proposes the amendment of said order to pool all such mineral interests in the formations of Mississippian and Siluro-Devonian age underlying the W/2 of said Section 5 and to approve the unorthodox location of the well for said formations.

CASE 5639: Application of Franklin, Aston & Fair for pool creation and special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Strawn production for its Aztec State No. 3 Well located 710 feet from the North line and 2110 feet from the East line of Section 36, Township 17 South, Range 32 East, Lea County, New Mexico, and for the promulgation of special rules therefor, including a provision for 160-acre spacing units.

CASE 5640: Application of Phillips Petroleum Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of East Brunson-Ellenburger, East Brunson-McKee and Drinkard oil production in the wellbore of its Sims No. 6 Well located in Unit N of Section 24, Township 22 South, Range 37 East, Lea County, New Mexico.

CASE 5641: Application of John Yurenka for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced water by injection into the Queen formation through the open-hole interval from approximately 3800 to 3875 feet in his State JC "T" Well No. 1 located in Unit B of Section 16, Township 23 South, Range 36 East, Langille-Markiz Pool, Lea County, New Mexico.

CASE 5642: Application of Penroc Oil Corporation for downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle Canyon and Morrow production in the wellbore of its JCN-State Well No. 1, located in Unit D of Section 2, Township 20 South, Range 22 East, Eddy County, New Mexico.

CASE 5643: Southeastern New Mexico nomenclature case calling for an order for the creation and extension of certain pools in Eddy and Lea Counties, New Mexico.

(a) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for San Andres production and designated as the West Arkansas Junction-San Andres Pool. The discovery well is the Coquina Oil Corporation State KKN Well No. 1, located in Unit J of Section 20, Township 18 South, Range 36 East, NMPM. Said pool would comprise:

TOWNSHIP 18 SOUTH, RANGE 36 EAST, NMPM
Section 20: SE/4

(b) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Atoka production and designated as the Cabin Lake-Atoka Gas Pool. The discovery well is the Corinne Grace Livingston Ridge Unit Well No. 1Y, located in Unit L of Section 36, Township 21 South, Range 30 East, NMPM. Said pool would comprise:

TOWNSHIP 21 SOUTH, RANGE 30 EAST, NMPM
Section 36: W/2

(c) CREATE a new pool in Eddy County, New Mexico, classified as an oil pool for Grayburg-San Andres production and designated as the Cemetery-Grayburg San Andres Pool. The discovery well is the Gulf Oil Corporation Jones Federal NCT-A Well No. 1, located in Unit L of Section 14, Township 20 South, Range 25 East, NMPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 25 EAST, NMPM
Section 14: SW/4

(d) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Wolfcamp production and designated as the North Cemetery-Wolfcamp Gas Pool. The discovery well is the David Faskin Seven Rivers Federal Well No. 1, located in Unit C of Section 17, Township 20 South, Range 25 East, NMPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 25 EAST, NMPM
Section 17: N/2

(e) CREATE a new pool in Eddy County, New Mexico, classified as an oil pool for Wolfcamp production and designated as the West Henshaw-Wolfcamp Pool. The discovery well is the Yates Petroleum Corporation Marco Polo EA State Well No. 1, located in Unit H of Section 32, Township 16 South, Range 30 East, NMPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 30 EAST, NMPM
Section 32: NE/4

(f) CREATE a new pool in Eddy County, New Mexico, classified as an oil pool for Queen-Grayburg and San Andres production and designated as the South Loco Hills Queen-Grayburg-San Andres Pool. The discovery well is the Gene A. Snow Alcott Well No. 1, located in Unit I of Section 31, Township 18 South, Range 29 East, NMPM. Said pool would comprise:

TOWNSHIP 18 SOUTH, RANGE 29 EAST, NMPM
Section 31: SE/4 NE/4 & NE/4 SE/4
Section 32: S/2 NW/4, N/2 SW/4, W/2 NE/4 and SE/4 NE/4

(g) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the West Lusk-Morrow Gas Pool. The discovery well is the Adobe Oil Company Hannifin State Com Well No. 1, located in Unit P of Section 16, Township 19 South, Range 31 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM
Section 16: S/2

(h) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the Otis-Morrow Gas Pool. The discovery well is the Apexco Inc. Walterschied Com Well No. 1, located in Unit G of Section 35, Township 22 South, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 22 SOUTH, RANGE 27 EAST, NMPM
Section 26: W/2
Section 35: All

(i) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Atoka production and designated as the Penasco Draw-Atoka Gas Pool. The discovery well is the Yates Petroleum Corporation Scout EH Federal Com Well No. 2, located in Unit I of Section 27, Township 18 South, Range 25 East, NMPM. Said pool would comprise:

TOWNSHIP 18 SOUTH, RANGE 25 EAST, NMPM
Section 27: E/2

(j) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the Scanlon-Morrow Gas Pool. The discovery well is the Harvey E. Yates Fannie Lou Federal Well No. 1, located in Unit G of Section 31, Township 20 South, Range 29 East, NMPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 29 EAST, NMPM
Section 31: N/2

(k) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Queen production and designated as the Square Lake-Queen Gas Pool. The discovery well is the Corpening Enterprises Exxon State Well No. 1, located in Unit M of Section 16, Township 16 South, Range 31 East, NMPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 31 EAST, NMPM
Section 16: SW/4

(l) EXTEND the Atoka-San Andres Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM
Section 21: S/2 SE/4 & E/2 SW/4
Section 28: N/2 NE/4

(m) EXTEND the North Burton Flat-Atoka Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 28 EAST, NMPM
Section 13: N/2
Section 14: All

(n) EXTEND the Cabin Lake-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 30 EAST, NMPM
Section 35: E/2
Section 36: W/2

(o) EXTEND the Cruz-Delaware Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 33 EAST, NMPM
Section 19: NE/4

(p) EXTEND the Drinkard Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM
Section 25: SE/4

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM
Section 30: SW/4

Examiner Hearing - Wednesday - March 3, 1976
-4-

(q) EXTEND the La Rica-Morrow Gas Pool in Lea County, New Mexico, to include therein:
TOWNSHIP 19 SOUTH, RANGE 34 EAST, NMPM
Section 3: All

(r) EXTEND the Paddock Pool in Lea County, New Mexico, to include therein:
TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM
Section 21: SW/4

(s) EXTEND the Red Lake-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:
TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM
Section 24: E/2

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 19: W/2

(t) EXTEND the Tonto (Seven Rivers) Pool in Lea County, New Mexico, to include therein:
TOWNSHIP 19 SOUTH, RANGE 33 EAST, NMPM
Section 13: SW/4
Section 14: S/2

(u) EXTEND the Townsend-Strawn Pool in Lea County, New Mexico, to include therein:
TOWNSHIP 16 SOUTH, RANGE 35 EAST, NMPM
Section 4: Lots 1, 2, 7, 8, 9, 10, 15, & 16, and SE/4

(v) EXTEND the White City-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:
TOWNSHIP 24 SOUTH, RANGE 26 EAST, NMPM
Section 16: All
Section 34: All
TOWNSHIP 25 SOUTH, RANGE 26 EAST, NMPM
Section 3: All

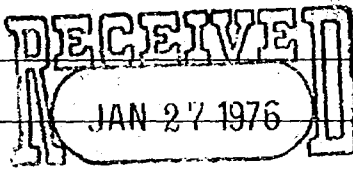
CASE 5098: (Reopened) (Continued from February 18, 1976 Examiner Hearing)

In the matter of Case 5098 being reopened pursuant to the provisions of Order No. R-4682, which order established special rules for the Red Tank-Morrow Gas Pool, Lea County, New Mexico, including a provision for 640-acre spacing. All interested parties may appear and show cause why said pool should not be developed on 320-acre spacing.

Case 5635

176

NEW MEXICO OIL CONSERVATION COMMISSION
APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR Sundance Oil Company		ADDRESS Drawer 1, Artesia, N.M. 88210	
LEASE NAME Ingram Federal	WELL NO. #2	FIELD Tom Tom San Andres	COUNTY Chaves
LOCATION UNIT LETTER I ; WELL IS LOCATED 1980 FEET FROM THE S LINE AND 660 FEET FROM THE E LINE, SECTION 5 TOWNSHIP 8 RANGE 31 NMPM.			
CASING AND TUBING DATA			
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT
SURFACE CASING Wt. 200	8 5/8"	403'	200sx.
INTERMEDIATE none			
LONG STRING Wt. 11.00 JCR-55	4 1/2"	4000'	300sx.
TUBING 4.70 JCR-55	2 3/8"	3957	NAME, MODEL AND DEPTH OF TUBING PACKER HORCO R-4 Tension Packer
NAME OF PROPOSED INJECTION FORMATION San Andres		TOP OF FORMATION 3805'	BOTTOM OF FORMATION 3907'
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing		PERFORATIONS OR OPEN HOLES? 3852-58	PROPOSED INTERVAL(S) OF INJECTION 3852-58
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? as an oil well		HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? No
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH			
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA 250'		DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA 3800' Bottom of P-1 zone	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA 3930' Top of P-3 zone
ESTIMATED DAILY INJECTION VOLUME (BBLs.) 200	MINIMUM 50	MAXIMUM 200	OPEN OR CLOSED TYPE SYSTEM close
ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE - yes		WATER TO BE DISPOSED OF salt water	NATURAL WATER IN DISPOSAL ZONE same
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) Emmett McCombs, Box 93, Kenna, N.M. 88122		ARE WATER ANALYSES ATTACHED? yes	
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL Sundance Oil Company is operator of all property within this 1/2 mile limit.			
			
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING? yes	SURFACE CONSERVATION COMM. x Santa Fe	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL none	THE NEW MEXICO STATE ENGINEER yes
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B) yes	PLAT OF AREA yes	ELECTRICAL LOG yes	DIAGRAMMATIC SKETCH OF WELL yes

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

W. P. McCombs Supt. Permian Basin Area 1-23-76
(Signature) (Title) (Date)

NOTE: Should waivers from the State Engineer, the surface owner, and all operators within one-half mile of the proposed injection well, not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

Case 5635

Ingram Federal #2

On first treatment, perf. @ 3854-55-56-61-63-68-69, 2 P/F, .43" jet. Spotted acid and pulled R-4 packer back to 3799.46', 124 joints and set packer. Squeeze acid for 2 hours, formation broke @ 3400 psi, average rate of 1.5 BPM, ISDP 500 in 3 minutes on vacuum. Pump 2000 gal 15% HCl acid, trip packer and put on pump. This well pumped @ 200 BPD rate for 63 days with no show of oil or gas. We pulled rods and tubing, ran back RTTS packer and set @ 3715. Pump 300ax of Class C cement, 2% Calcium Chloride and squeezed off @ 3000#.

Drilled out and re-perf. @ 3852-53-54-55-56-57-58, 2 P/F, .43" jet. Ran 2 3/8" tubing and Guiberson packer, spotted 20% HCl acid, pulled back to 3780', treated with 5000 gal 20% HCl acid. Max.Press. 2000#, Min.Press. 400#, average injection rate 1/4 BPM. ISDP was on vacuum.

We swab tested for 3 days with no show of oil or gas, fluid standing @ 1800' of surface. We feel that we should put this well on as a disposal well, as it is low to our Paye wells and will back us up to the west side of our lease. The Ingram #4 which we have just plugged was also wet in the same zone, which is, top part of P-2 zone that is productive on the Paye Federal lease.

We would like to run R-4 packer and 124 joints of 2 3/8" tubing and set @ 3799' to inject water in perfs 3852-58, 2 P/F, .43" jet, as a water disposal well.

In the event we should encounter pressure, tests will be run to make sure we are in zone.

If well has to be shut-in, we can circulate well with treated water or squeeze zone off if necessary.

January 23, 1976

Mr. Jerry Sexton
Oil Conservation Commission
Box 1980
Hobbs, New Mexico 88240

Dear Mr. Sexton:

Re: Water Disposal Well
Ingram Federal #2
Tom Tom San Andres field
Chaves County, New Mexico

In a previous letter, permission was ask to convert the Ingram Federal #3 to a water injection well. It should have read, Ingram Federal #2.

Our first proposal was to set this Ingram Federal #2 well up as an injection well to a pilot flood but after talking to Mr. Dick Staments, in Santa Fe, we discussed the fact that we had no producers on the Ingram Federal properties, in section 5.

It was decided to re-file the application as a Water Disposal Well.

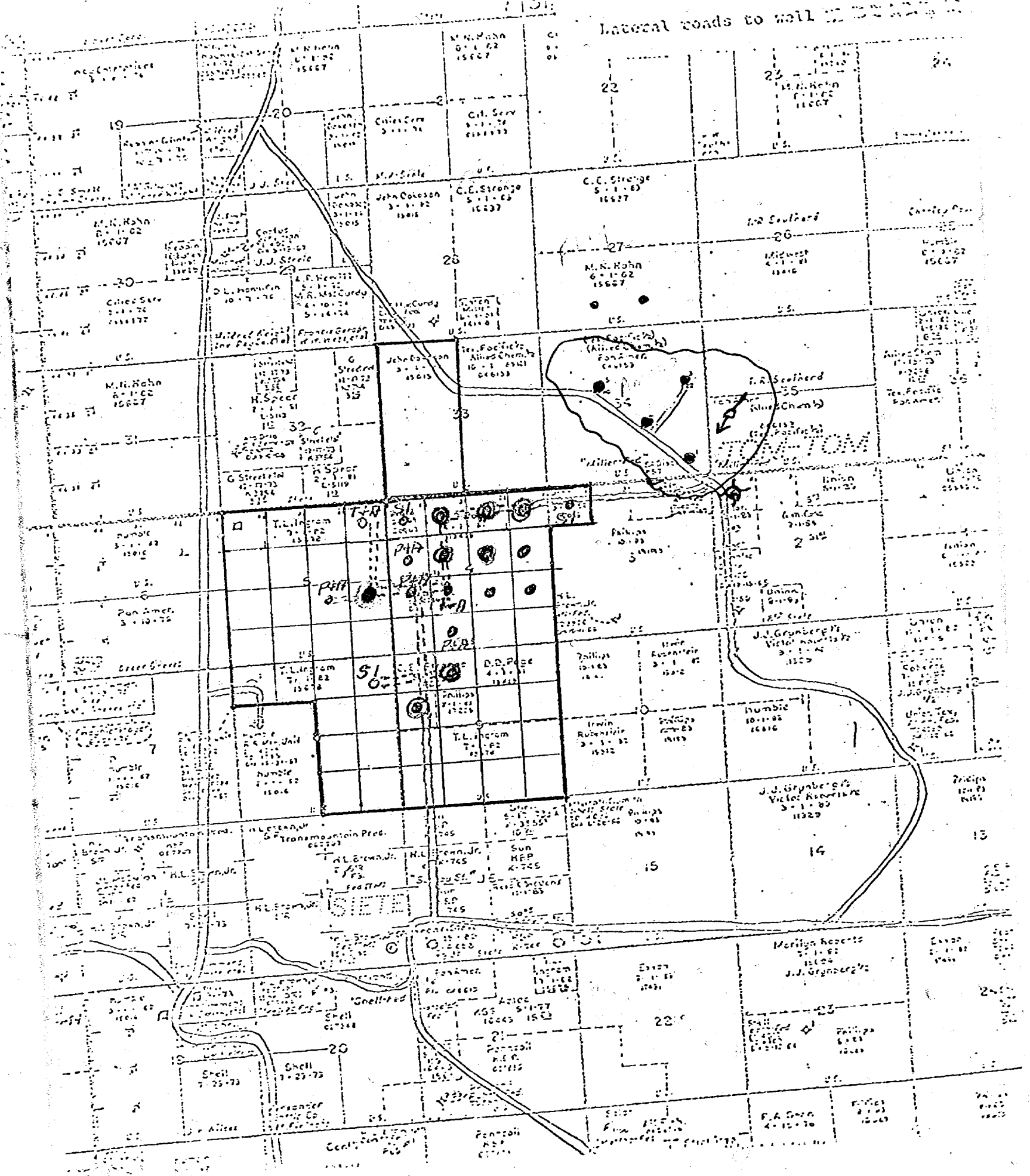
Very Truly Yours,

W. N. Morgan

William N. Morgan
Sundance Oil Company

WNM/mm

151
Lateral roads to well 11



2" X 1000# BALL VALVE
2" X 2000# BALL VALVE
SLIPS & PACK OFF
LARKIN 2 3/8" X 4 1/2"
LARKIN 75 HEAD
4 1/2" CASING INS SLIPS
8 5/8" X 28" CASING
CEMENT CIRCULATED
SET AT 403' GL

CEMENT TOP 2930'
300 psi CLASS H 3 1/4" CER 2
5" SALT 10" SAND PB.

ANNULUS TREATED
WITH UNITED CHEMICAL
THC-71 INHIBITOR

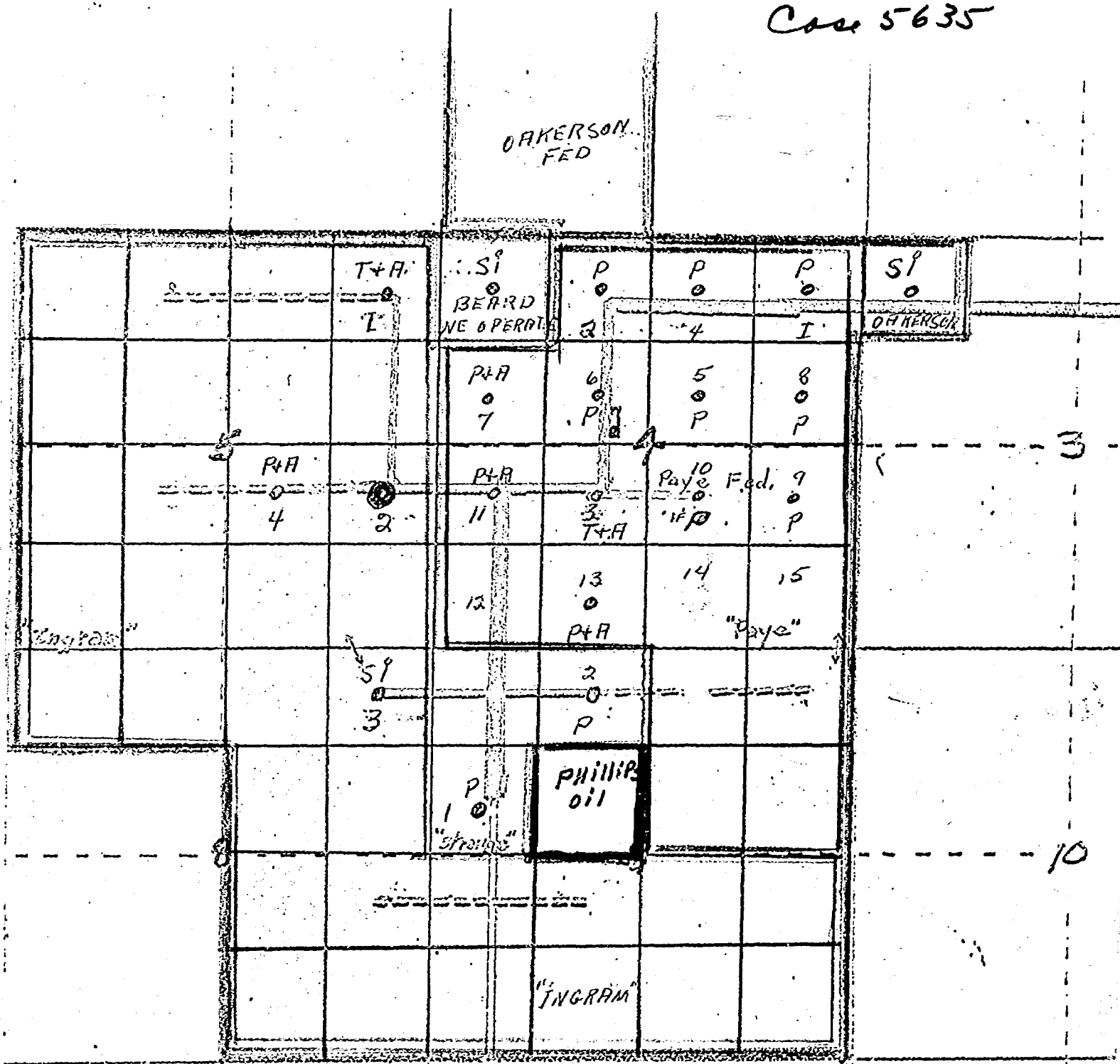
HOWCO R4 PRR 3799'

PERES 3852' TO 58'

4 1/2" X 11.60# JCW
INSERT FLOAT
TRIPPED @ 4003'

2 3/8" TUBING IN TENSION 30,000#

Case 5635



INGRAM = LEASE OUTLINED IN BLUE
 PAYE = LEASE OUTLINED IN GREEN

17 16 15

HALLIBURTON COMPANY
MIDLAND DIVISION
LOVINGTON, NEW MEXICO 88260
LABORATORY WATER ANALYSIS

No. 675-763

To San Antonio Oil Company

Date 9-11-75

Travis, TX

Artesia, New Mexico

ATTN: Mr. Bill Morgan

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by _____ Date Rec. 9-11-75

Well No. Imperial 42 Depth 3907' Formation San Andres

County Chaves Field Tom Tom Source DST #1

	Sampler	Tool Top	Top of Fluid
Resistivity	0.041 @ 77°F.	0.041 @ 77°F.	0.030 @ 77°F.
Specific Gravity	1.195		
pH	5.4		
Calcium (Ca)	39,500		*MPL
Magnesium (Mg)	6,780		
Chlorides (Cl)	185,000	185,000	100,000
Sulfates (SO ₄)	150		
Bicarbonates (HCO ₃)	12		
Soluble Iron (Fe)	11		
Top of Collars - Res. @ 77°F. - 0.041	Chlorides, wpl - 185,000		
Fit Sample - Res. @ 77°F. - 0.045	Chlorides, wpl - 125,000		

Remarks:

*Milligrams per liter

Respectfully submitted,

Analyst: Travis
cc:

HALLIBURTON COMPANY

By W. L. Brown

DIVISION CHEMIST

NOTICE

This report is limited to the described sample tested. Any user of this report agrees that Halliburton shall not be liable for any loss or damage, whether it be to act or omission, resulting from such report or its use.

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPPLICATE*
(Other instructions on re-
verse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.
NM 15678

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Ingram Federal

9. WELL NO.

#2

10. FIELD AND POOL, OR WILDCAT

Tom Tom San Andres

11. SEC., T., R., M., OR BLK. AND
SURVEY OR AREA

Sec 5 Twn8S Rge31E

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

4256.5'GR

12. COUNTY OR PARISH

Chaves

13. STATE

NM

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

PULL OR ALTER CASING

FRACTURE TREAT

MULTIPLE COMPLETE

SHOOT OR ACIDIZE

ABANDON*

REPAIR WELL

CHANGE PLANS

(Other) **Water Disposal Well**

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

REPAIRING WELL

FRACTURE TREATMENT

ALTERING CASING

SHOOTING OR ACIDIZING

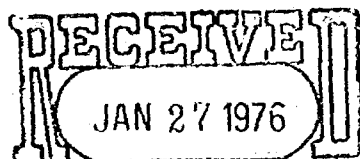
ABANDONMENT*

(Other)

(NOTE: Report results of multiple completion on Well
Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Intend to convert well to a water disposal well.



OIL CONSERVATION COMM.
Santa Fe

18. I hereby certify that the foregoing is true and correct

SIGNED *M. N. Morgan*

TITLE **Supt. Permian Basin Area** DATE **1-23-76**

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side



United States Department of the Interior

GEOLOGICAL SURVEY

P. O. Drawer U
Artesia, New Mexico 88210

January 30, 1976

Sundance Oil Company
Post Office Drawer I
Artesia, New Mexico 88210

RECEIVED

FEB 2 1976

Gentlemen:

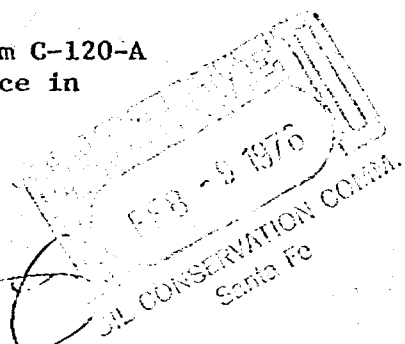
O. C. C.
ARTESIA, OFFICE

Your Notice of Intention to convert and operate as a waste water disposal well your No. 2 Ingram Federal on lease NM-15678 located 1980/S 660/E sec. 5, T. 8 S., R. 31 E., N.M.P.M., Chaves County, New Mexico, by injecting produced waste waters into the San Andres formation at an interval 3852-58 feet, is hereby approved subject to approval by the New Mexico Oil Conservation Commission and the following:

1. If off-lease waters are to be included in this disposal facility, a special land use permit to operate this well as such must be secured from the Bureau of Land Management prior to disposing of any such waters.
2. Where applicable and required, right-of-way permits for pipe lines from other leases must be secured from the Bureau of Land Management or other surface owners prior to laying of any such gathering lines. If additional surface disturbance is required as a result of this action, a Surface Use Plan must be submitted for approval prior to commencing this action.
3. The usual Sundry Notice and Report (form 9-331 in quintuplicate) must be filed with this office prior to commencing any workover, treatment, suspension of operation, or change of status of this well.
4. Prior approval must be obtained for any change or deviation from the original plans or revision thereof.
5. A monthly injection report (N.M.O.C.C. form C-120-A acceptable) must be submitted to this office in duplicate.

Sincerely yours,

James A. Knauf
James A. Knauf
District Engineer



cc: Roswell

Form 331
(May 1963)

ARTESIA, OFFICE COPY

N. M. O. C. C. COPY

Case 5635

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE*
(Other instructions on re-
verse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.
NM 15678

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Ingram Federal

9. WELL NO.

#2

10. FIELD AND POOL, OR WILDCAT

Tom Tom San Andres

11. SEC., T., R., M., OR BLK. AND
SURVEY OR AREA

Sec 5 Twn8S Rge31E

12. COUNTY OR PARISH

Chaves

13. STATE

NM

SUNDY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT" for such proposals.)

1. ☐ OIL WELL ☐ GAS WELL ☐ OTHER

Water Disposal Well

2. NAME OF OPERATOR

Sundance Oil Company

3. ADDRESS OF OPERATOR

Drawer I, Artesia, New Mexico 88210

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*
See also space 17 below.)
At surface

1980 From South Line, 660 From East Line

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

4256.5 GR

16.

Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other) **Water Disposal Well**

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Intend to convert well to a water disposal well.
(attachments)

RECEIVED
JAN 26 1976
U.S. GEOLOGICAL SURVEY
ARTESIA, NEW MEXICO

RECEIVED

FEB 2 1976

O.C.C.
ARTESIA, OFFICE

18. I hereby certify that the foregoing is true and correct

SIGNED **W. J. Morgan**

TITLE **Supt. Permian Basin Area**

DATE **1-23-76**

(This space for Federal or State office use)

APPROVED BY

CONDITIONS OF APPROVAL, IF ANY:

TITLE

DATE

*See Instructions on Reverse Side

Case 5635

OIL CONSERVATION COMMISSION
Hobbs DISTRICT

OIL CONSERVATION COMMISSION
BOX 2088
SANTA FE, NEW MEXICO

DATE January 28, 1976

RE: Proposed MC _____
Proposed DHC _____
Proposed NSL _____
Proposed SWD X _____
Proposed WFX _____
Proposed PMX _____

Gentlemen:

I have examined the application dated _____
for the Sundance Oil Co. Ingram Federal #2-I 5-8-31
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

O.K.---J.S.

Yours very truly,

Jerry Sexton

RECEIVED
JAN 29 1976
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Case 5635

January 23, 1976

OK JS

Mr. Jerry Sexton
Oil Conservation Commission
Box 1980
Hobbs, New Mexico 88240

Dear Mr. Sexton:

Re: Water Disposal Well
Ingram Federal #2
Tom Tom San Andres field
Chaves County, New Mexico

In a previous letter, permission was ask to convert the Ingram Federal #3 to a water injection well. It should have read, Ingram Federal #2.

Our first proposal was to set this Ingram Federal #2 well up as an injection well to a pilot flood but after talking to Mr. Dick Staments, in Santa Fe, we discussed the fact that we had no producers on the Ingram Federal properties, in section 5.

It was decided to re-file the application as a Water Disposal Well.

Very Truly Yours,

W. N. Morgan

William N. Morgan
Sundance Oil Company

WNN/mm

Case 5635

Form C-108
Revised 1-1-65

NEW MEXICO OIL CONSERVATION COMMISSION
APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR Sundance Oil Company		ADDRESS Drawer I, Artesia, N.M. 88210	
LEASE NAME Ingram Federal	WELL NO. #2	FIELD Tom Tom San Andres	COUNTY Chaves
LOCATION UNIT LETTER I ; WELL IS LOCATED 1980 FEET FROM THE S LINE AND 660 FEET FROM THE E LINE, SECTION 5 TOWNSHIP 8 RANGE 31 N.M.P.M.			
CASING AND TUBING DATA			
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT
SURFACE CASING Wt. 28#	8 5/8"	403'	200sx.
INTERMEDIATE none			
LONG STRING Wt. 11.6# JCW-55	4 1/2"	4000'	300sx.
TUBING 4.70 JCW-55	2 3/8"	3857	NAME, MODEL AND DEPTH OF TUBING PACKER HOWCO R-4 Tension Packer
NAME OF PROPOSED INJECTION FORMATION San Andres		TOP OF FORMATION 3805'	BOTTOM OF FORMATION 3907'
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing		PERFORATIONS OR OPEN HOLE? 3852-58	PROPOSED INTERVAL(S) OF INJECTION 3852-58
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? as an oil well		HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? No
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH			
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA Est. 250'		DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA 3800' Bottom of P-1 zone	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA 3930' Top of P-3 zone
ANTICIPATED DAILY INJECTION VOLUME (BBLs.) 200	MINIMUM 50	MAXIMUM 200	OPEN OR CLOSED TYPE SYSTEM close
ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE - yes		WATER TO BE DISPOSED OF salt water	IS INJECTION TO BE BY GRAVITY OR PRESSURE? gravity
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) Emmett McCombs, Box 93, Kenna, N.M. 88122		NATURAL WATER IN DISPOSAL ZONE same	APPROX. PRESSURE (PSI) vac.
ARE WATER ANALYSES ATTACHED? yes			
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL Sundance Oil Company is operator of all property within this 1/2 mile limit.			
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING? yes		SURFACE OWNER X	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL none
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B) yes		PLAY OF AREA yes	THE NEW MEXICO STATE ENGINEER yes
		ELECTRICAL LOG yes	DIAGRAMMATIC SKETCH OF WELL yes

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

W. M. Morgan
(Signature)

Supt. Permian Basin Area
(Title)

1-23-76
(Date)

NOTE: Should waivers from the State Engineer, the surface owner, and all operators within one-half mile of the proposed injection well, not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPPLICATE*
(Other instructions on re-
verse side)

Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input checked="" type="checkbox"/> Water Disposal Well	5. LEASE DESIGNATION AND SERIAL NO. NM 15678
2. NAME OF OPERATOR Sundance Oil Company	6. IF INDIAN, ALLOTTEE OR TRIBE NAME ---
3. ADDRESS OF OPERATOR Drawer I, Artesia, New Mexico 88210	7. UNIT AGREEMENT NAME ---
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface 1980 From South Line, 660 From East Line	8. FARM OR LEASE NAME Ingram Federal
	9. WELL NO. #2
	10. FIELD AND POOL, OR WILDCAT Tom Tom San Andres
	11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec 5 Twn8S Rge31E
14. PERMIT NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.) 4256.5' GR
	12. COUNTY OR PARISH Chaves
	13. STATE NM

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) <input type="checkbox"/>	(Other) <input type="checkbox"/>
(Other) Water Disposal Well		(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)	

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Intend to covert well to a water disposal well.

18. I hereby certify that the foregoing is true and correct

SIGNED W. M. Morgan TITLE Supt. Permian Basin Area DATE 1-23-76

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Ingram Federal #2

On first treatment, perf. @ 3854-55-56-61-65-68-69, 2 P/F, .45" jet. Spotted acid and pulled R-4 packer back to 3799.46', 124 joints and set packer. Squeeze acid for 2 hours, formation broke @ 3400 psi, average rate of 1.5 BPM, ISDP 500 in 3 minutes on vacuum. Pump 2000 gal 15% NE acid, trip packer and put on pump. This well pumped @ 200 BPD rate for 63 days with no show of oil or gas. We pulled rods and tubing, ran back RTTS packer and set @ 3715. Pump 300sx of Class C cement, 2% Calcium Chloride and squeezed off @ 3000#.

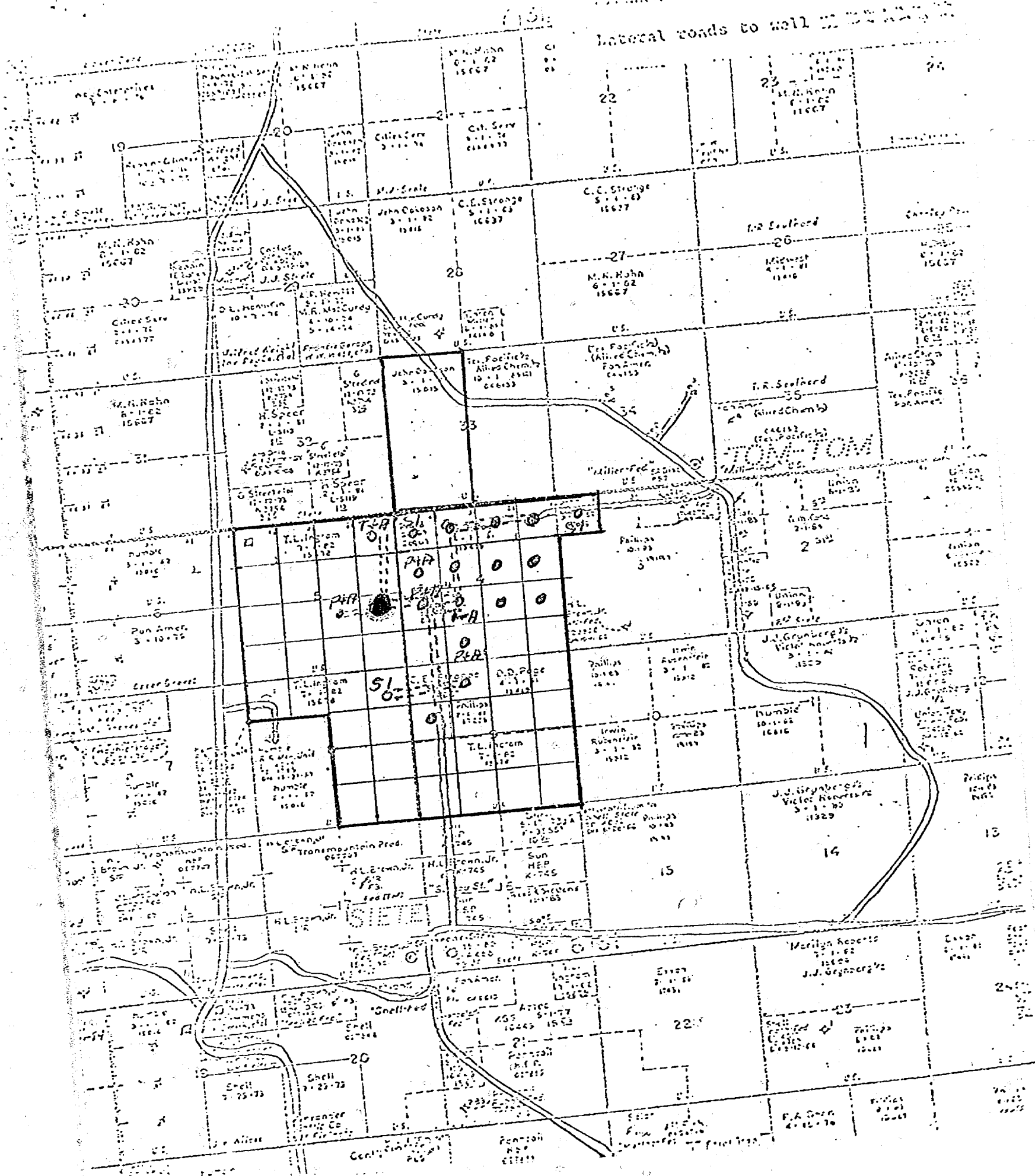
Drilled out and re-perf. @ 3852-53-54-55-56-57-58, 2 P/F, .43" jet. Ran 2 3/8" tubing and Guiberson packer, spotted 20% NE acid, pulled back to 3780', treated with 5000 gal 20% NE acid. Max.Press. 2000#, Min.Press. 400#, average injection rate 1/4 BPM. ISDP was on vacuum.

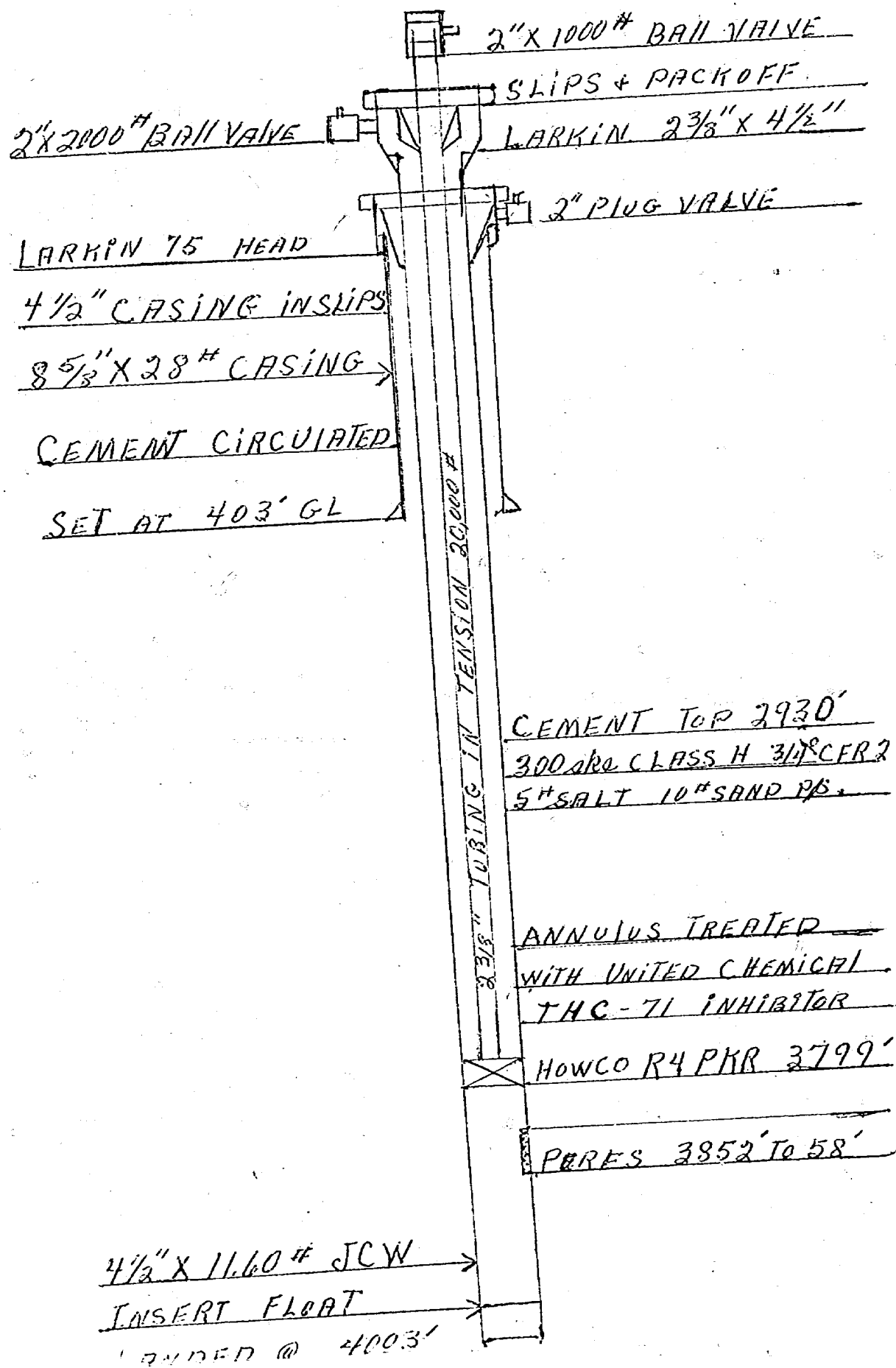
We swab tested for 3 days with no show of oil or gas, fluid standing @ 1800' of surface. We feel that we should put this well on as a disposal well, as it is low to our Paye wells and will back us up to the west side of our lease. The Ingram #4 which we have just plugged was also wet in the same zone, which is, top part of P-2 zone that is productive on the Paye Federal lease.

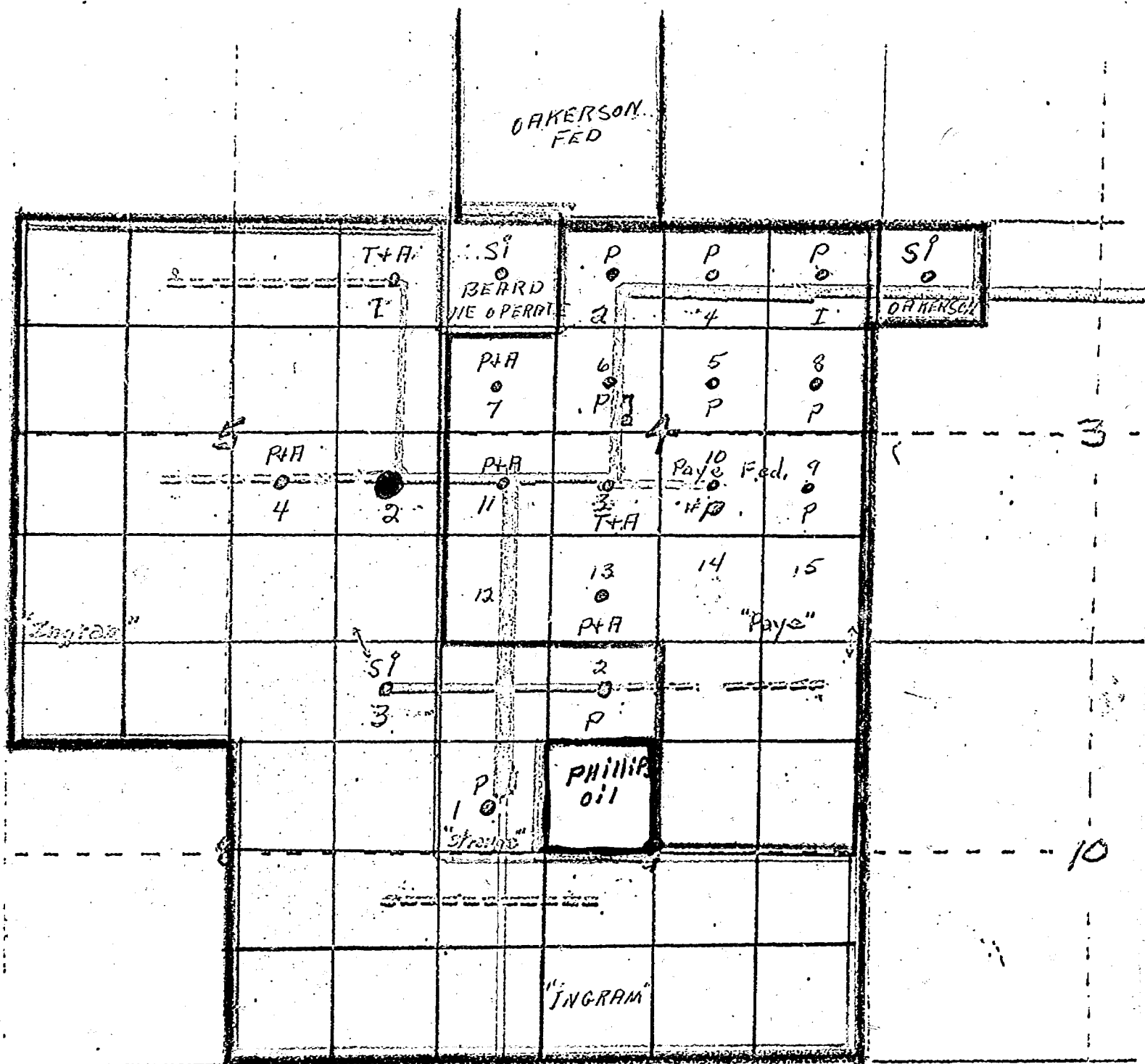
We would like to run R-4 packer and 124 joints of 2 3/8" tubing and set @ 3799' to inject water in perfs 3852-58, 2 P/F, .43" jet, as a water disposal well.

In the event we should encounter pressure, tests will be run to make sure we are in zone.

If well has to be shut-in, we can circulate well with treated water or squeeze zone off if necessary.







INGRAM = LEASE OUTLINED IN BLUE
 PAYE = LEASE OUTLINED IN GREEN

==== present road
 ===== proposed road

HALLIBURTON COMPANY
MIDLAND DIVISION
LOVINGTON, NEW MEXICO 88260
LABORATORY WATER ANALYSIS

No. 175-773

To San Juan Oil Company

Date 9-11-75

Tracer I

Antonia, New Mexico

ATTN: Mr. Bill Morgan

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by _____ Date Rec. 9-11-75

Well No. Logan Fed. 42 Depth 3937' Formation San Andres

County Chaves Field Tom Tom Source DST #1

	Sampler	Tool Tor	Tor of Fluid
Resistivity	0.041 @ 77°F.	0.041 @ 77°F.	0.080 @ 77°F.
Specific Gravity	1.125		
pH	5.4		
Calcium (Ca)	39,800		*MPL
Magnesium (Mg)	6,780		
Chlorides (Cl)	185,000	185,000	100,000
Sulfates (SO ₄)	450		
Bicarbonates (HCO ₃)	12		
Soluble Iron (Fe)	Nil		
<hr/>			
For 6" Collars - Res. @ 77°F. - 0.041	Chlorides, mrl - 185,000		
For Sample - Res. @ 77°F. - 0.045	Chlorides, mrl - 125,000		

Remarks:

*Milligrams per liter

Respectfully submitted,

Analyst: Barbara
cc:

HALLIBURTON COMPANY

By W. J. Brown

DIVISION CHEMIST

NOTICE

This report is limited to the described sample tested. Any user of this report agrees that Halliburton shall not be liable for any loss or damage, whether it be to act or omission, resulting from such report or its use.

DRAFT

dr/

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5635

APPLICATION OF SUNDANCE OIL COMPANY
FOR SALT WATER DISPOSAL, CHAVES
COUNTY, NEW MEXICO.

Order No. R- 5176

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on March 3, 1976 at Santa Fe, New Mexico, before Examiner, Richard L. Stamets.

NOW, on this day of March, 1976, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Sundance Oil Company, is the owner and operator of the Ingram Federal Well No. 2, located in Unit I of Section 5, Township 8 South, Range 31 East, NMPM, Tom Tom-San Andres Pool, Chaves County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the San Andres formation, with injection into the perforated interval from approximately 3,852 feet to 3,858 feet.

(4) That the injection should be accomplished through 2 3/8 inch internally coated ~~plastic lined~~ tubing installed in a packer set at approximately 3799 feet; that the casing-tubing annulus should be filled with an inert fluid; and that ~~a pressure gauge or approved leak detection device should be attached to the~~ measures should be taken in order to ~~detect any leakage~~

CASE NO. _____

~~annulus in order to~~ determine leakage in the casing, tubing,
or packer. *if pressure is used*

(4) That ~~the~~ injection well or system should be equipped
with a pop-off valve or acceptable substitute which will
limit the wellhead pressure on the injection well to no more
than ~~100 psi~~. *one half pound psi for each foot of*
depth to the uppermost perforation.

(5) That the operator should notify the supervisor of
the Hubbs district office of the Commission of the date
and time of the installation of disposal equipment so that the
same may be inspected.

(6) That the operator should take all steps necessary to
ensure that the injected water enters only the proposed injection
interval and is not permitted to escape to other formations or
onto the surface.

(7) That approval of the subject application will prevent
the drilling of unnecessary wells and otherwise prevent waste
and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Sundance Oil Company,
is hereby authorized to utilize its Ingram Federal Well No. 2,
located in Unit I of Section 5, Township 8 South,
Range 31 East, NMPM, Tom Tom-San Andres Pool,
Chaves County, New Mexico, to dispose of produced salt
water into the San Andres formation, injec-
tion to be accomplished through 2 3/8-inch
tubing installed in a packer set at approximately 3799 feet,
with injection into the perforated interval from approximately
3,852 feet to 3,858 feet;

internally coated
PROVIDED HOWEVER, that the tubing shall be ~~plastic lined~~
and that the casing-tubing annulus shall be filled with an inert
fluid, ~~and that a pressure gauge shall be attached to the annulus~~
~~or the annulus shall be equipped with an approved leak detection~~
~~device in order to determine leakage in the casing, tubing, or~~
~~packer.~~

(2) That the disposal well shall be equipped and/or tested to determine leakage in the casing, tubing, or packer in the manner described under (a) or (b) below:

- (a) If injection is by pressure system, the annulus shall be equipped with a pressure gauge or other approved leak detection device.
- (b) If injection takes place with no measurable surface pressure or a negative pressure, the operator shall test the annulus with positive pressure within 30 days of initial injection and annually thereafter. The supervisor of the Hobbs district office of the Commission shall be notified of the date and time of such tests in order that they may be witnessed.

CASE NO. _____

if injection is by pressure
(3) That the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than ~~700 psi~~ *one half psi for each foot of depth to the uppermost perforation*.

(4) That the operator shall notify the supervisor of the Hobbs district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.

(5) That the operator shall immediately notify the supervisor of the Commission's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(6) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1.20 of the Commission Rules and Regulations.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5635
Order No. R-5176

APPLICATION OF SUNDANCE OIL COMPANY
FOR SALT WATER DISPOSAL, CHAVES
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on March 3, 1976, at Santa Fe, New Mexico, before Examiner, Richard L. Stamets.

NOW, on this 10th day of March, 1976, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.
- (2) That the applicant, Sundance Oil Company, is the owner and operator of the Ingram Federal Well No. 2, located in Unit I of Section 5, Township 8 South, Range 31 East, NMPM, Tom Tom-San Andres Pool, Chaves County, New Mexico.
- (3) That the applicant proposes to utilize said well to dispose of produced salt water into the San Andres formation, with injection into the perforated interval, from approximately 3,852 feet to 3,858 feet.
- (4) That the injection should be accomplished through 2 3/8-inch internally coated tubing installed in a packer set at approximately 3799 feet; that the casing-tubing annulus should be filled with an inert fluid; and that measures should be taken in order to determine leakage in the casing, tubing, or packer.
- (5) That if the pressure is used the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than one half psi for each foot of depth to the uppermost perforation.
- (6) That the operator should notify the supervisor of the Hobbs district office of the Commission of the date and time of

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Case No. 5635
Order No. R-5176

the installation of disposal equipment so that the same may be inspected.

(7) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(8) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Sundance Oil Company, is hereby authorized to utilize its Ingram Federal Well No. 2, located in Unit I of Section 5, Township 8 South, Range 31 East, NMPM, Tom Tom-San Andres Pool, Chaves County, New Mexico, to dispose of produced salt water into the San Andres formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 3799 feet, with injection into the perforated interval from approximately 3,852 feet to 3,858 feet;

PROVIDED HOWEVER, that the tubing shall be internally coated and that the casing-tubing annulus shall be filled with an inert fluid.

(2) That the disposal well shall be equipped and/or tested to determine leakage in the casing, tubing, or packer in the manner described under (a) or (b) below:

(a) If injection is by pressure system, the annulus shall be equipped with a pressure gauge or other approved leak detection device.

(b) If injection takes place with no measurable surface pressure or a negative pressure, the operator shall test the annulus with positive pressure within 30 days of initial injection and annually thereafter. The supervisor of the Hobbs district office of the Commission shall be notified of the date and time of such tests in order that they may be witnessed.

(3) That if injection is by pressure the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than one half psi for each foot of depth to the uppermost perforation.

(4) That the operator shall notify the supervisor of the Hobbs district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.

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Case No. 5635
Order No. R-5176

(5) That the operator shall immediately notify the supervisor of the Commission's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(6) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Phil R. Lucero

PHIL R. LUCERO, Chairman

Emer C. Arnold

EMERY C. ARNOLD, Member

Joe D. Ramey

JOE D. RAMEY, Member & Secretary

S E A L

jr/